ELECTRICAL REVIEW

16th OCTOBER, 1953

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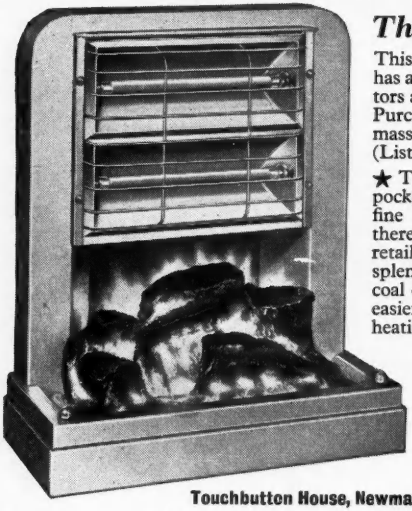

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ELECTRICAL REVIEW 16th OCTOBER, 1953

THE OLDEST ELECTRICAL PAPER • ESTABLISHED 1872 • VOL. 153 • NO. 16

Domestic Electrification

SOME of the newspapers commented rather acidly upon the statements in the British Electricity Authority's report for 1952–53 regarding the need for greater electrification of industry, agriculture and the home. They contended that while generating capacity was still inadequate it was inconsistent to advocate the increased use of electricity. Yet it is still true that better industrial production is dependent upon electrical methods; the B.E.A. is only following an accepted policy in encouraging industrial electrification and it has to ensure that it has the plant to meet the greater future demand. The Authority is also justified in advocating, at the same time, the use of more electricity in the home. Quite apart from the benefits to the housewife which electricity can bring, it is necessary that the plant installed to satisfy industrial requirements shall be used to the best advantage: in other words that the load factor shall be improved. This improvement can be achieved only by stimulating the domestic demand for, contrary to the contention of the opponents of electricity, most of this demand is off-peak.

Another good reason why domestic electricity consumption (and that postulates the sale of electrical appliances) should be encouraged lies in the export field. It is repeatedly pointed out that export business to be successful must be based on a substantial home market so that development and overhead costs shall be widely spread and thereby reduced on each article. Moreover it is often difficult to sell overseas buyers apparatus if we ourselves do not use it extensively and thus prove its worth.

The B.E.A. says that close attention is being paid to practicable forms of tariffs which will encourage a more diversified use of electricity. It is not easy to devise and operate such tariffs but it is evident that a great scope exists for them. Attractive night rates might do a great deal to persuade consumers to install water heaters or even storage-type space heaters, for instance.

Electricity is still comparatively cheap (some, like the *Economist*, say too cheap) but if the price is to be kept down the load factor must be improved. This involves re-education of the public in electrical methods and assistance from the Government in the form of reduced or removed purchase tax and relaxed hire-purchase restrictions. It is the purpose of this special issue of the *Electrical Review* to provide the electrical trade with a comprehensive survey of domestic apparatus to assist them in acquainting the public of what is available to them. We welcome the introductory article by Dame Caroline Haslett, who has probably done more than any single individual to make the nation's housewives electrically minded.

ENGINEERING IN BROADCASTING

Despite the fundamental technical education nowadays of all electrical men in electronic theory; of two generations of schoolboy passion in the assembly of radio receivers; and, most of all, of the widespread background knowledge of the engineering and scientific work of pioneers like Marconi and Fleming, there is a tendency, even among electrical engineers, to treat broadcasting mainly as a form of entertainment, and to give insufficient regard to the electrical engineering side. This should not be so, and here Mr. H. Bishop in his I.E.E. presidential address did the electrical industry a great service in placing the electrical engineering aspect of broadcasting in its correct perspective. The increase in a little over 20 years of the number of transmitting stations of nearly 300 per cent, coincident with a bandwidth increase of only 20 per cent, has presented an engineering problem of the first magnitude; another is the possibility of the provision of an alternative television service which would demand a second chain of transmitting stations.

INTERCONNECTION OR MAIN TRANSMISSION?

Most electrical engineers have become accustomed since 1926 to the idea of the 132 kV grid being used mainly for interconnection purposes rather than for main transmission. Similarly most of us are aware of the great trek of industry to the south-west during the war. This led to a fairly common belief, especially with the introduction of the 275 kV grid, that the original purpose of interconnection had been replaced by main transmission. In connection with the opening of the new power station at Uskmouth recently, the British Electricity Authority reminded us that as late as the summer of 1952 South Wales at peak periods was importing up to about one-third of the total energy it required and that this quantity of power was the maximum which under normal conditions could safely be imported. Thus we see that in this country, at any rate, the solution of the balance or out-of-balance of electricity supply is to be found in generation rather than in major transmission.

BACK TO NORMAL

Wartime conditions forced us, in 1941, to reduce the size of the *Electrical Review*. Our readers were understanding and accepted the change—in fact many of them told us that they preferred the small size. Nevertheless, we have always regarded the reduction as a temporary measure, to be abandoned as soon as possible. After the war paper remained scarce and expensive and printing arrangements were difficult, but during the past year or so there has been some amelioration and now we feel that it is possible to get back to our proper size. Accordingly as from the first issue in the New Year the type area of the *Electrical Review* will be 10in by 7in. The new size will enable us to introduce a number of improvements.

Electrical Home Service

Meeting the Modern Woman's Need

By DAME CAROLINE HASLETT, D.B.E., J.P.

ELECTRICAL development is now to proceed unhampered by the restrictions which have hindered its progress during and since the war years. This forward movement is welcomed by all who have long realized that electricity's great contribution to our national economy must depend upon a balanced expansion, and in the words of the latest annual report of the British Electricity Authority: "There is common agreement that more electrification in industry, agriculture and the home goes hand in hand with increasing productivity and higher living standards."

It is encouraging to be assured that the domestic load, far from being a drain on industrial resources, is essential if British workers are to have parity in electrical horse power with American workers. This is necessary to increase the output required for our survival in competitive foreign markets, but the power from our new generating stations can be given cheaply only if demand is spread over the twenty-four hours. Towards this diversity of load, and consequent economic use of the plant installed, the domestic user can make a great contribution; indeed nationally we cannot afford to ignore the domestic load.

Dame Caroline Haslett is an active worker in many spheres but she is best known to electrical people as the Director of the Electrical Association for Women, a member of the British Electricity Authority and this year's chairman of the Council of the British Electrical Development Association

These facts should be fully understood so that industry may realize that its cheap power depends on greater use of electricity in the home, and that the housewife may know that she is actually contributing to economic industrial production whilst enjoying the well-known benefits of electricity in her own home. The development of a good load factor through a balanced use of power should not be restricted by a wrong attitude of mind on the part of any user, now that the restrictions imposed by plant shortage are largely removed.

In the recent past opponents of the domestic use of electricity have levelled their criticism at the electric fire. One would sometimes think from the critics that all modern electric heating apparatus was of the radiant fire type, when, of course, there is a wide variety of electric heating methods which themselves help to spread the heating load. These range from low-temperature tubular heaters and convectors to thermal storage heaters designed to use electricity at night and give it out as heat during the following day. An important feature of such apparatus is that, in taking the chill off a room, it tends to lessen the amount of heat which an occupant thinks is required. On coming into a room having background heating one has not the same inclination to switch everything on as is the case in a totally unheated one.

Regulated and carefully placed heat in the home is important in securing a balanced electricity load for the power station. Moreover the last word has certainly not been said in electric heating, and research into the use of new materials and new methods differing from the traditional electric fire will lead to further integration of electric heating as a contributor to a good load factor.

The critics also take no account of the part which the electric cooker and a soundly designed electric water heating installation can play in improving the load factor, while

they ignore the diversified use of motor-driven apparatus for laundry, cooking and cleaning operations.

Changed Conditions

In the lapse of time since the last period of domestic electrical development before the war, social conditions have undergone a change and this has a close bearing on the use made of electricity in the home to-day. Paid domestic labour has almost vanished from the modern home; prices of most consumer goods have considerably increased, in contrast to domestic electricity charges which in 1937–38 averaged 1·522d per kWh and in 1952–53 1·452d per kWh;* the layout and the furnishing of present-day homes have become simpler and favour the interchangeability of functions within one room: for example, the kitchen-dining room and the bedroom-study. Domestic planning of all kinds has altered in character, whether it is in use of time, in use of material, or in choice of method; it is more "streamlined," for the modern home requires a variety of functions to be performed in a much smaller space.

Developments in processed food, and especially in frozen food, have contributed towards changed eating habits; meals are often more informal, contrasted with the family meals of not so long ago, and many more meals are eaten away from home. The universal use of radio and the great extension of television have also had their influence on home layout and have made special demands on electrical equipment. Indeed, these two developments in the entertainment world constitute a cogent reason for electrifying both old and new homes to keep up with the demands; they can also have an influence on future appliance design. Moreover, radio and television are both powerful educational media, and a wider public is becoming aware of engineering developments and mechanical inventions. For a variety of reasons, therefore, many more people are knowledgeable on the economic and engineering aspects of electricity supply and more alive to the possibilities of functional and æsthetic design of apparatus.

Women in wartime industry and in the technical branches of the Services became mechanically minded; courses of electrical instruction such as the E.A.W. Home Workers' Courses which are so popular with housewives, schoolgirls and home helps have had the same effect. Indeed, branches in the Midlands and North-East have arranged courses for home helps at the request of the local education authorities. In addition, new houses and flats, including prefabricated houses, which have kitchen equipment on the unit principle, have helped to remove any "gadget" complex, and to allay any suggestion that domestic electrical apparatus is for luxury use only.

Consumers to-day are much more inclined than formerly to choose apparatus to meet a given need in accordance with a sequence of domestic operations and conforming to a specified design and size. The importance of this informed point of view was seen in the reception given to the E.A.W. Report "Towards Perfection"; several manufacturers have said that they are incorporating in their new designs some of the suggestions made.

The value of an informed public, and especially of informed housewives, lies not only in the more efficient use of apparatus and in the suggestions put before manufacturers, but also in representations to local authorities and Government Departments concerned with planning and housing. It is essential that all new houses shall be adequately wired for present and future needs, and that there shall be a comprehensive service to consumers, covering advice in selecting and using apparatus, prompt replacement of parts and speedy repairs to appliances. Guidance in selection is given in the newly published list of domestic electrical appliances tested and approved by E.D.A. and the Electricity Boards and circulated at the request of the Ministry of Fuel and Power by the Ministry of Local Government and Housing to local housing authorities.

Safety and reliability are the first requirements of any domestic equipment, and striking testimony to the long service of reputable electrical equipment was given in the "Towards Perfection" Report. The Heating Appliances (Fireguards) Regulations, 1953, are a step towards greater safety which had already been taken by many firms.

An even greater measure of safety and reliability in new apparatus is guaranteed

* Taken from the British Electricity Authority's 5th Report, Appendix 4, "Electricity Sales and Revenue, 1935–6 to 1952–3, Great Britain, excluding the North of Scotland District."

by the opening of the new buildings of the E.D.A. Testing House at Leatherhead; this is the culmination of six years' public service and is of course of primary importance to the woman in the home.

Convenience in obtaining replacements to apparatus and in choosing equipment to suit a given space in to-day's smaller rooms is facilitated by the work of the B.S.I. and by E.D.A. specifications on the interchangeability of cooker plates. Easy maintenance is a point of which the housewife takes special note when choosing new equipment, for she cannot afford for her apparatus to be out of commission for long, and easy removal of parts for cleaning, of course, improves the efficiency and the life of the equipment.

The attention of the public needs to be drawn more closely to the importance of heat insulation so that the most economic use may be made of electricity for space heating, and particularly for water heating. So often the belief that electric water heating is over-expensive results from ignorance of the need to lag tanks and pipes and to avoid long pipe-runs in the installation.

Closer Co-operation

A pleasing feature of the greater co-operation between the supply, manufacturing and contracting sides of the electrical industry and the public is the awareness among young designers of the great possibilities which electricity affords in providing the kind of equipment for modern living. This integration of interests gives a special value to the Royal Society of Arts bursaries for design in both the lighting fittings and the domestic electrical appliances sections.

In passing, it may be hoped that all the employees in the electrical industry may be imbued with the electrical ideal and as far as possible may show an honest conviction of its merits by using electricity in their own homes. It may also be hoped that full advantage will be taken of the training schemes which are open to employees in all sections of the industry, for trained, enthusiastic staff are essential to any enterprise.

It was highly significant that, in the memorable debate on electricity supplies in the House of Commons on 19th June last, when the Minister of Fuel and Power announced the authority to invest an additional one and a half million pounds for rural electrification in 1953 and 1954, speakers from all parties stressed the need to ensure that electricity should lighten the load of the countrywoman as well as increasing food production. The electrical industry accepted the Minister's challenge "as a signal and an inspiration to push ahead with fresh energy with this great national task."

Electricity in the home, while benefiting the whole family, makes its first appeal and primary service to the housewife, a term which covers many differing groups of women with differing needs. There is the woman whose time is spent mainly supplying her family needs and yet trying to squeeze out time for voluntary work and personal development. There is the business or professional woman living alone, or in some cases also combining family duties as wife and mother or as the support of dependent relatives. There is a special group of women handicapped through some disability of sight or limb; electricity gives them the priceless boon of being no longer "special" but normal housewives through the use of special cooker switches, motor-driven apparatus which saves their strength, and the extended use of lightweight materials which enables them to tackle household jobs formerly beyond them. The higher loading and reduced weight of electric irons, together with the motor-driven washer and wringer, puts home laundry within the reach of women for whom formerly it was a physical burden, and for whom commercial prices represented a financial burden. The incorporation of water heating elements in modern electric washers can further reduce the housewife's labours; the provision of a rotary ironer makes for convenience in dealing with large articles; and the fully automatic washer, in taking the laundry to the damp-dry stage, confines many jobs to one small area of the kitchen.

Automatic control of heat and automatic timing devices are among the developments which extend the services of electricity in the home. Not only does electrical apparatus save the time and energy and money of the housewife, but it frees her from the irritating details of watching the clock or the appliance in operation. Such equipment includes automatic safety cut-outs for kettles; thermostatically controlled water heaters and irons; automatic toasters; variable heat control for cooker plates and

thermostatic control for ovens; as well as time switches for cookers, washers and space and water heaters.

Improvements which make for mechanical efficiency, for quieter operation and for suppression of interference with radio and television programmes are among the newer developments which electricity offers to the modern home. The housewife's "tools," while pleasing to handle, are also increasingly pleasing to look at because of the variety of colours arising from developments in vitreous enamel. The modern housewife is both design and colour conscious, and electrical apparatus fulfils both requirements. The use of light colours and new finishes also makes for easier cleaning, while developments in the use of pressed steel help to lower production costs.

The range of domestic equipment is being extended by the introduction into the home kitchen of apparatus formerly restricted to commercial use. This includes the dish washer, which when combined with a clothes washer provides a valuable twin appliance; the mixer-beater with its multiplicity of functions from cake mixing to potato peeling; and the newly introduced domestic freezer. In fact, refrigeration would appear to offer great scope in electrical equipment to take account of food resources from home and overseas and to enable electricity to manifest still further its great contribution to the health of the nation.

Although lighting is the one application of electricity which is universally acclaimed, there is great scope in the domestic lighting field for educating the public into the uses of light for beauty, utility and safety. The appreciation of the value of good lighting which has done so much for our factories can bring similar amenities into our homes.

With restrictions lifted we can go forward with a surer step into a new era. Progress is more certain because both the industry and the public are agreed on the difficulties inherent in the economic situation and are also agreed on the goal to be reached. The challenge represented by rural needs extends to the whole country, for it is electricity in the homes of the nation which will help to bring the prosperity and happiness which is their right.

MIDLANDS IDEAL HOME EXHIBITION

A GOOD opportunity for people living in the Midlands to see many of the latest electrical appliances now available for use in the home has been provided by the *Birmingham Mail* Ideal Home Exhibition which closes to-morrow (Saturday) at the Bingley Hall, Birmingham. On a large stand arranged by the Midlands Electricity Board are to be seen extensive displays of cookers, refrigerators, wash boilers, washing machines, water heaters and small appliances as well as the latest television and radio receivers. Other comprehensive exhibits of electrical, television and radio apparatus are shown on the Beehive, Hadley Bros. and Walker Bros. stands, the last-mentioned making a special display of the Kenwood "Chef" food mixer and the Parnall washing machine. Parnall (Yate), Ltd., also has a separate display of its own.

Washing machines, easily the most conspicuous appliance in the exhibition, appear too on the stands of Wilkins & Mitchell, Ltd. ("Servis"), Hoover, Ltd., and the British Vacuum Cleaner & Engineering Co., Ltd. ("Goblin"). In addition the last two companies demonstrate their vacuum cleaning equipment. The Hoover floor polisher is designed for scrubbing as well as polishing. The Carefree washing machine attachment for fitting to the sink, etc., and the "Cresta" 1½ cu ft refrigerator with a wooden case, designed for building in, are notable items of the Regent stand.

Other specially interesting features of the exhibition are cottage flats, presented by the Ministry of Housing and Local Government, and the "Next to Nothing" bungalow which shows what can be done in inexpensive furnishing and equipment largely from scrap materials.

Scottish Display

The South West Scotland Electricity Board's exhibit at this year's Scottish Ideal Homes Exhibition now being held in Glasgow places special emphasis on cookers, about forty different models being on show. Other electrical appliances are well represented, the general endeavour being to encourage the public to use electricity as against earlier appeals at conservation.

VIEWS on the NEWS

By REFLECTOR

SOME of the daily papers have made much of the "huge" surplus of the British Electricity Authority in 1952-53, suggesting that instead of making such a profit the B.E.A. and Area Boards should have refrained from raising their charges. No doubt £7½ million is a large sum but when it is matched against the revenue (about £291 million) or the value of the authorities' assets (round about £1,000 million) it is seen to be not so startling after all.

* * *

Under the heading "Best Customers" the following cryptic note appears in the *Star*:—

> "The Eastern Region uses more electricity than any other area."

I do not know what this means. The Eastern Electricity Area ranked fifth in this respect during the twelve months ended 31st March last, and it certainly cannot refer to the Eastern Region of British Railways which is considerably behind the Southern Region in the matter of electrification, although it is now proceeding with substantial extensions.

* * *

Not for the first time, I saw the other day by the side of some road excavations a board which proclaimed in bold lettering: "This main is being laid to meet the ever-increasing demand for gas." This ingenious way of mollifying retarded motorists is one which the electrical industry might follow even if its trenches are not so wide and so inconvenient to traffic. The gas notice recalls an American company's practice, which I recorded some time ago. When a week-end cut in supply to any district has to be made for the carrying out of extensions the company publishes a note in the local Press pointing out that it is bringing the benefits of electrical service to further members of the community and asks for the customers' indulgence on this ground.

* * *

I mentioned a short time ago the late Mr. Frank Parkinson's house which was being offered for sale. Now I hear of some other Parkinson houses of a different kind. These are six houses at Guiseley, near Leeds, which have been built from funds bequeathed for the purpose by Mr. Parkinson for housing elderly people. These buildings are beautifully designed and provided with a number of services to make life easier for the tenants. They are to be officially opened to-morrow (Saturday).

* * *

Commenting on the *Electrical Review's* recent reference to the need for action to improve the electrical load factor the *Gas Times* says:—

> "We envisage competition. To our way of thinking, the armoury of the gas industry expressed in annual capital expenditure is very weak indeed, in spite of a strong case. Perhaps the truth is that the gas industry does not really desire to progress swiftly and prefers to deal with its revenue and expenditure on a postage-stamp basis."

I am not quite clear about the meaning of the concluding statement but I feel that it does injustice to our very lively rivals.

* * *

Joining in the fashionable vilification of electric heating, the *Western Mail* (Cardiff) says:—

> "Electricity is an extremely handy method of supplying heat, light and power, but it is also an expensive one. When it is produced from other fuels there is a loss of between 70 and 80 calories on what is put in."

I am certain that these figures were not supplied by the gas industry or any maker of solid-fuel appliances.

Electricity in the Home

A Survey of Recent Developments and Apparatus Available

AS a result of the improvement in generating facilities and other factors concerned, including last April's small but none the less welcome reduction in purchase tax, conditions are now favourable for a return to a large-scale development of domestic electrification. We are therefore resuming this week the publication of our annual Special Domestic Number which has not appeared since 1939 because of the war and its aftermath.

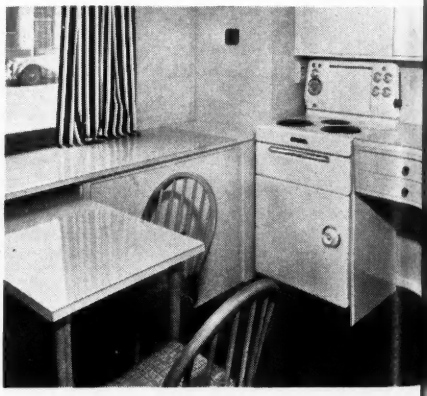
Accordingly in this issue there is first a series of articles dealing with the main trends in the design and utilization of the main classes of equipment, cooking, water heating, space heating, refrigeration, cleaning and polishing, laundry, lighting and miscellaneous apparatus. This is followed by a detailed description in tabular form of some of the principal appliances.

Interspersed with this information are pages of pictures relating not only to the appliances already referred to but also other items of special interest. Finally there is a general list of the numerous appliances now available for use in the home, the full names and addresses of the manufacturers mentioned in the list and elsewhere in this survey being given on pages 884–886.

Cookers

IN the evolution of electric cookers it is not to be wondered at if there is a tendency for the different makes, the standard models at all events, to show a marked similarity; in any case, the adoption of a standard hob height of 36in and interchangeable boiling plates imposes an initial basic limitation on design. Indeed the uninitiated may well be excused for being unable at a glance to distinguish one post-war make from another.

Almost without exception the cookers have been designed on severely functional lines with their smooth "dust-trapless" easily cleaned exteriors relieved only by means of colour, decorative handles and control knobs, or the use of plinth bases (perhaps with drawers incorporated), which have a tendency to replace legs. A minor variation is the method of mounting the oven door, there now being a somewhat greater use of the drop-down type.



Much attention has been paid to securing as large an oven as possible without sacrificing the lagging and there is no excuse for the housewife failing to clean the interior which is more often than not removable either as a whole or in sections. Thermo-

static control may now be taken to be a recognized standard feature on all but the "baby" type of cooker where the "Simmerstat" is often employed instead.

Hob equipment generally consists of a grill-boiler and an 8in boiling plate, the larger models having an additional 6¼in plate. Both solid or radiant types are offered, the latter having the advantage of a quicker heating up time but costing rather more. Generally a cooker is supplied with one plate controlled by a "Simmerstat" (or multi-switch) and there is a good argument for extending the use of this refinement of control to all plates and to the grill-boiler as well.

In almost all cases the controls are situated on the right-hand side of the oven, a notable exception in the lower price range of cookers being the Jackson "Two-Ninety" which has two controls each side of the hotcupboard. This cooker further breaks away from convention inasmuch that the legs have been carried up the sides of the oven to the level of the hotcupboard with bars across the top to form useful towel rails.

This question of the position of controls does give manufacturers an opportunity to exercise their originality to some extent though whether the claimed elimination of bending down is of great importance is a matter of opinion. The Belling "Streamline" model, which has an inner glass oven door, also has its controls at the sides of the hotcupboard.

The Creda "Comet," which seems to be the only true horizontal model now on the market, apart from the Canadian-made Moffat, has its controls just underneath the hob, while the Falco "Royal" has them mounted on the splashplate together with time switch control. Going a step further the new Revo "Monarch," an exceptionally large cooker selling at a low price, has the controls fitted on top of the splashplate. The arrangement greatly facilitates wiring and the splashplate can be folded down flat for transport.

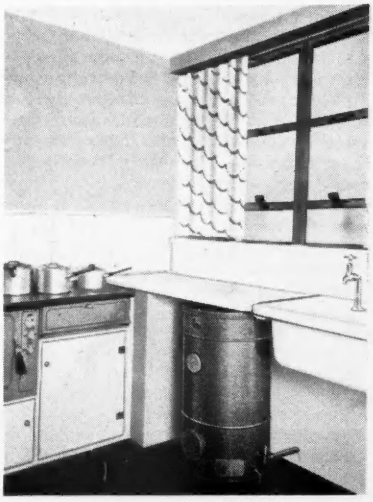
In the "de luxe" class of cookers such as the Creda "Comet" and the Falco "Royal" the fact that separate grills are provided raises once again the controversial question whether the grill-boiler is indeed the last word for the "popular" range.

For those who have not the room for a full-sized cooker there are plenty of units suitable for operation from a 13 A or 15 A socket. These range from the small breakfast cooker to models with a fair sized oven capable of cooking a complete meal.

Whatever type of hotplate is used improved results will be obtained if utensils specially made with heavy ground bases are employed. Still higher efficiency is claimed to be obtained by Hague & McKenzie by having the bases permanently blackened.

With regard to the numerous other cooking appliances available, boiling rings, toasters, waffle irons, kettles, coffee percolators, tea-making sets, etc., the most important development has been the improvement in the materials supply position making possible the return to the highest quality of construction and finish.

Water Heating



AFTER a period of unjustified official disfavour electric water heating is now in the course of restoration to its former status of load to be encouraged from the points of view both of the electricity supply industry in particular and the husbanding of the nation's fuel resources in general. It is now realized that, far from being appliances which are mainly connected during periods in which there are the greatest demands on the generating

resources, water heaters provide a load which is very largely off-peak.

This is borne out by the investigations of the Ridley Committee and that this view has now been adopted in official circles is confirmed by the exemption on 21st August of all water heaters from the Hire Purchase (Control) Order which until that date made it obligatory for anyone buying a gas or electric water heater on hire purchase terms to put down a minimum initial deposit of 33⅓ per cent and to pay off the balance in not more than eighteen months. In announcing the relaxation of these restrictions the Board of Trade gave special emphasis to the Ridley Committee's findings that the use of electricity and gas involved less coal than solid fuel appliances in providing summer or occasional hot water supplies for the average household and that the wider installation of these appliances was therefore expected to assist in the saving of coal and in general fuel economy.

To a very considerable extent the saving in fuel is dependent on the increasing use of thermostatic control and the greater attention which is being paid to the thermal insulation of the installation. Both these features combine to make it possible and economical, if desired, to have the apparatus either permanently connected or time-switch controlled to off-peak periods, with practically no heat loss and without risk of damage to the apparatus. Even when the apparatus is permanently connected its demands on electricity supply are found to be mainly off-peak.

Apart from the increased convenience of having hot water automatically and constantly available without attention, the arrangement is of considerable benefit to the consumer financially, it being estimated that the adoption of an efficient lagging system may reduce electricity consumption due to radiation by as much as 90 per cent.

In the case of the self-contained thermal storage heater the matter of lagging is removed from the consumer's responsibility except in so far as the pipework is concerned. It is, however, especially in relation to conversion or combined solid fuel/electric installations that the immersion heater has a unique application.

Apart from the tendency towards thermostatic control and improved lagging it cannot be said that there have been recently any particularly noteworthy developments in the design and use of electric water heating apparatus. Some modifications have been made to the casing of the thermal storage heaters to give them a more modern appearance.

Probably no more economical arrangement can be found than the double-element type of apparatus which has one element (generally 500 W) in the top of the cylinder permanently connected and under thermostatic control to provide immediate supplies of hot water for washing up, etc., and the other element (2½ kW) at the bottom of the cylinder manually controlled to give larger quantities of water for baths, etc., when required. Available in 20 to 40 gal sizes, they are compactly designed to fit conveniently under the draining board or in other appropriate positions.

The geyser or instantaneous type of heater has never found much favour with electricity supply authorities. To give reasonably sufficient supplies a loading approaching the 10 kW mark is necessary and this is rather more than might be considered desirable for intermittent domestic use. Latterly, however, smaller units with loadings of not more than 3 kW have come on to the market for those whose requirements of hot water do not exceed about a quart a minute at 130 deg F.

Space Heating

ALTHOUGH the heavy purchase tax (still 75 per cent after a reduction from 100 per cent in the last Budget) has imposed a severe handicap on the development of electric heating, there is no evidence of the slackening of the public interest in, and demand for, this highly convenient and labour-saving service. In fact, with the ever-increasing cost of solid fuel, the contrary is rather the case and more and more people are discovering that, apart from other advantages, it is cheaper to use electricity if heating is required for periods up to six hours or even longer.

From the manufacturers' point of view the high rate of tax has inevitably meant that, in order to keep the price of their products within limits which prospective purchasers can be expected to regard as reasonable, designs in general have had to be kept as simple as possible and without embellishments and refinements which

would add to the cost. This is not altogether a feature to be deprecated, for the simple designs imposed by the conditions tend to harmonize with practically every sort of furnishing and decorating scheme and to be in accord with modern tendencies in this respect.

Apart from this general simplification of design there is another development which is perhaps even more conspicuous. To conform to new safety regulations new fires now have to be provided with efficient guards. By appropriate design these have in many cases been employed to introduce a touch of originality otherwise lacking from the basically simple character of the appliance. Some manufacturers have gone a stage further and made a virtue of necessity by incorporating the guard as an integral part of the apparatus rather than as an appendage. Another development aiming at increased safety and of particular importance in nurseries, etc., is the practice of utilizing a mercury switch to cut off the power automatically if the fire is overturned.

Except for situations in which its focusing qualities would be a disadvantage or possibly even dangerous, the reflector fire appears to a large extent to have ousted the once more popular fire bar type. While the design of the reflector is generally fairly straightforward, some efforts have been directed, particularly in the more expensive appliances, to securing a more effective distribution of heat, especially to the sides.

It has always surprised us that the fan heater has not achieved greater popularity. This useful apparatus very quickly raises the temperature throughout a room, not only in one localized spot, and it has the additional advantage of being available for use, without the heating elements switched on, for cooling in warm weather.

For long-period or background heating, increasing use is being made of convectors and also radiators, especially the oil-filled type; there is also still a considerable demand for tubular heaters. Panel heaters have their particular appeal; an example of Dulrae "Medrae" units fitted under the window and in the fireplace is illustrated.

Comparatively recently two forms of heat storage space heaters have made their appearance, the Aberdare Electric Company's "Thermodare" unit which employs a solid refractory material as its heat storage medium and the G.E.C. model which makes use of interchangeable concrete blocks. Since it was first introduced the latter unit has been redesigned and the price has been reduced from £16 to £12 10s. Both of these have undoubted merits from the national fuel economy point of view and if aided by a low off-peak tariff should prove an attractive proposition in offices and commercial establishments at any rate, even if they are (officially) considered unsuitable for use in the ordinary household. Off-peak heating can also be achieved by the use of the "Panelec" floor warming system which is being successfully employed in schools, factories, etc.

Refrigeration

THE official attitude towards the domestic refrigerator still seems undecided and with the improvement in the electricity supply position the present might well be an opportune time for reconsidering its status. Immediately after

the war the refrigerator was considered almost an essential and on a par with the cooker to the extent that it was freed from purchase tax and also installed as a part of the standard equipment of emergency prefabricated bungalows.

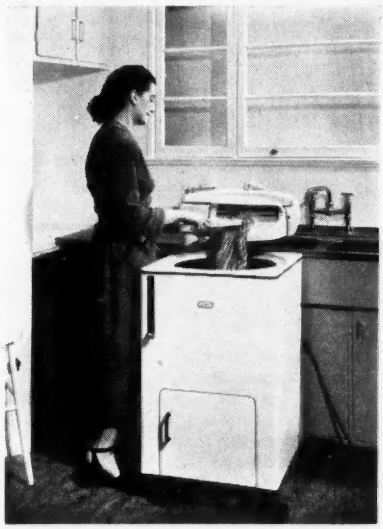
Since those days, however, this appliance has been gradually elevated or lowered, however one cares to regard it, to the position of a near-luxury with a purchase tax of 50 per cent (until last April 66⅔ per cent). Certainly from the point of view of the national health and the husbanding of our food resources there is every argument for a reconsideration of the position.

Probably the most noticeable technical development has been the greatly increased number of absorption models now being manufactured. Until a few years ago the Electrolux machine was the only one of this type on the market: to-day there are half-a-dozen or more. These machines have the advantage of absolute quietness in operation, and also have no moving parts requiring lubrication and eventual replacement.

On the other hand, however, their electricity consumption, though small, is at least twice that of the compressor type and they generally do not provide quite as much storage capacity for given overall dimensions, a point of special importance in the case of the smaller machines required for use in the restricted space available in many kitchens. Compressor type machines also generally have a somewhat greater reserve of refrigerative capacity, a point in their favour in especially hot weather and when the storage of frozen foodstuffs is required.

More and more machines of the table-top type are coming on to the market to meet the requirements of the owner of the small kitchen and a useful Electrolux innovation is the incorporation of an unrefrigerated drawer at the top for holding kitchen implements.

Although white is the standard finish almost universally adopted, one manufacturer, Insulations & Constructions, Ltd., has opened up new possibilities by introducing models with a range of wood finishes designed to harmonize with the furniture of dining or other rooms, thus greatly extending the number of appropriate positions for equipment hitherto confined almost exclusively to the kitchen.



Home Laundry

PROBABLY no other branch of household activities provides such opportunities for electrical labour-saving as does home laundry. There can be few homes having electricity supplies which do not now regard the electric iron as an essential, while the wash-boiler too has long proved its worth. It is, however, the washing machine which since the war has made the greatest strides in winning the public regard. Though handicapped to some extent by the high rate of purchase tax (now 50 per cent and until recently 66⅔ per cent), the availability of smaller and more compact machines with hand wringers has helped to bring electric washing machines within the reach of a greatly increased number of potential users who hitherto have been deterred by restricted space and/or financial resources.

Whether the washing machine with a hand wringer does in fact eliminate the hardest part of the work on the wash day is open to argument but its use does introduce the housewife to electric laundering and it is now possible to obtain power wringers separately. The usefulness of many of the machines fitted with power wringers is being increased by the availability of rotary ironing attachments.

These are also becoming more readily available as separate units, as is also the plate type of ironer. The convenience of drying and airing cabinets is not by any means confined to those living in flats, etc., who have no outdoor drying facilities available.

With regard to technical developments it seems strange that it has taken so long to discover that in ironing it is the effective use of heat that is the main essential and that a weighty appliance is both superfluous and unnecessarily tiring. Many manufacturers are now concentrating production almost entirely on irons weighing about 3 lb instead of the hitherto more customary 4½ lb or so, and there is a tendency towards even lighter irons; the G.E.C. has just announced a model weighing only 2⅓ lb. Despite the obvious advantages of thermostatically controlled models there is still a surprisingly large demand for the non-automatic models in some areas.

Most wash-boilers are available fitted with safety devices to prevent damage to the elements in the event of the boilers being switched on empty or boiling dry, and switches are being made more readily accessible. Though somewhat more expensive, the cabinet type of wash-boiler tends to supersede the round models as conforming more to modern conceptions of kitchen apparatus design. Many models are now available with hand wringer attachments.

The most noticeable development in washing machine design is the increasingly large number of models which are now being fitted with heating elements. While this does not imply any dissatisfaction in the performance of the machines, there are still housewives who like to be able to boil their clothes. A wider section of the public catered for by this innovation, however, is that which has no convenient supply of hot water.

Fully automatic washing, rinsing and removal of most of the water is still carried out by one machine only, the Bendix, which employs spin-drying instead of the more customary wringing. Spin-drying is also used in one of the Thor models which is adaptable for washing dishes.

The majority of washing machines now on the market are of the cabinet type, usually with stow-away wringers and table tops, providing a convenient working surface when not in use. The inherently cheaper design possible does, however, favour the tub type of machine and one concern which till recently had made nothing but cabinet models has thought it worth while to produce a tub model to meet the demand for lower-price machines.

Apart from the customary type of washer there are also now on the market attachments, both incorporating motor-driven agitators and also operating from vacuum cleaners, for fitting into sinks, wash-boilers, etc.

Cleaning

IN view of the high rate of purchase tax (50 per cent now and until recently 66⅔) there has been a tendency for some manufacturers of vacuum cleaners to develop models of high efficiency but without " trimmings " in order to keep prices down to a level which the majority of the public can afford. Inevitably the appearance of these " utility " models has had to suffer to a certain extent but not so much as one might have imagined. Concentration on essentials ensures that their performance leaves nothing to be desired.

For those who demand such refinements as streamlined exteriors, built-in lights, etc. —and have the money to pay for them— there are plenty of " de luxe " models still available. Whatever the price paid, the purchaser can be sure that particular

attention has been paid to durability, the various new finishes now available assisting in this respect.

There is still a strong demand for both outside bag and cylindrical types, the former having the advantage of being able to be equipped with brushing and beating facilities for the more effective cleaning of carpets, while the latter is somewhat more readily adaptable for removing dust from walls, curtains, etc., and for cleaning under low furniture. Many possessors of both types find the light-weight hand vacuum cleaner a useful auxiliary and prefer its convenience to bothering with the dusting attachments of the standard machines, however easily and quickly these can be fixed.

Several new floor polishers have been introduced within the past few years, and prospective customers have a wide selection to choose from. Though obviously the scope for these is not so great as for vacuum cleaners, there appears to be a large potential market here which is at present only restrained by the artificially high prices resulting from an exorbitant rate of purchase tax.

If ever there were a class of labour-saving apparatus meriting a lowering or entire removal of purchase tax it is that covering house cleaning equipment. After the iron (which is tax free) the vacuum cleaner is almost certainly the most widely used electrical labour-saving appliance in the home to-day. Besides eliminating drudgery and performing its service more quickly and effectively than is possible by other methods, it makes an important contribution to healthy living.

Lighting

AN investigation a few months ago into the tastes of the public with regard to furniture revealed a surprisingly marked preference for what are now fashionably described as " contemporary " designs. A similar inquiry into the more limited field covering lighting fittings would probably show a similar tendency. Certainly while there still remains a considerable demand for period, candle lamp, decorative bowl, etc., fittings, there is a strong leaning towards the simpler, more utilitarian designs.

Some of these are almost ruthless in their approach to simplicity, consisting of nothing else but a section of rod, suitably fashioned to accommodate an equally severe sheet-metal shade, and a plain base or bracket. Usefulness is often increased by the incorporation of ingenious features giving unlimited adjustment to enable the light to be directed precisely where it is required. In most cases, although most of the light is directed downwards, a certain proportion is emitted from the top of the fitting to provide indirect illumination from the ceiling and so avoid too great a contrast in lighting intensities at different levels in the room.

Variations in the materials and designs of the shades provide opportunities for relieving the severity of the fittings. The old well-proved favourite, buckram, is still

one of the most popular media employed, while the wide new range of plastic materials now available offers plenty of scope for attractive treatment. Other materials, not by any means new, such as raffia and wicker, are also being effectively used to create a modern impression. In some instances design of the shades has been influenced by considerations of ease of packing and economy of transport space.

Up to the last war a large proportion of the decorative lighting glassware came from the Continent. The severing of the source of supply, however, resulted in a considerable expansion of the British glass industry

and the development of new techniques of production. As a result British manufacturers to-day can offer glass shades quite as good as those previously imported and incorporating a number of attractive new features.

The use of fluorescent lighting in the home has not progressed nearly so rapidly as one might have anticipated, despite the availability of shorter tubes which would appear to lend themselves more readily to decorative treatment. Hitherto the application of this highly economical form of illumination has been confined principally to the kitchen, etc., where the high intensity and correct colour rendering characteristics make the greatest appeal.

Miscellaneous

BESIDES the main domestic applications of electricity referred to in the foregoing articles there is a large and increasing number of other uses. There is scarcely any need to mention radio and television: the former is now considered almost indispensable while the latter has already found its way into nearly 2½ million homes (excluding those without licences).

For the kitchen there are a number of particularly useful labour-saving appliances, headed by the versatile mixing machine which with its various attachments performs a wide range of food and drink preparation duties. As the price of these is generally rather higher than many prospective customers are prepared to pay Kenwood Electric, Ltd., have recently brought out a small but efficient low-priced machine without stand and bowl.

Another appliance much in demand in the larger households is the automatic dish washer, now available from a number of makers and employing various techniques, which can be relied upon to clean the utensils, cutlery, etc., more quickly and hygienically than is possible by manual means. The killing of flies and other pests in the kitchen and elsewhere is another service which electricity can perform in the interests of health.

Reference to health brings to mind the further extensive range of electrical appliances now available for home use for preventing illness and for remedial treatment. Among these may be mentioned infra-red and ultra-violet ray lamps, and vibro-massagers.

The handyman will find jobs around the house greatly simplified by the many electric tools and their accessories now available, while in the garden advantage may be taken of such appliances as electric lawnmowers, hedge trimmers, soil heating equipment, greenhouse heaters, etc. The amateur poultry keeper will almost certainly obtain better results if he employs electric incubators, brooders, infra-red heaters and artificial lighting for extending the hens' "working hours" in the dark winter days.

For use in the garage there are, besides battery chargers, heaters for eliminating risk of damage by frost and for ensuring quick starting in cold weather.

With the improved electricity supply position there is little to complain of regarding the time-keeping qualities of electric clocks and it is to be hoped that soon it will be possible again to say all the year round that "electric time is the right time."

Among other appliances which make the home a pleasanter place to live in may be mentioned bedwarmers, blankets and pads, towel rails, hairdryers, fans and air conditioners, door bells and chimes, dry shavers, cigarette lighters, sewing machine motors, fire lighters and fountains.

COOKERS

Manufacturer:	Belling						British National Electrics ("B.N.E.")		
Model	64AB Streamline	47AB	45A "Baby Belling"	51 "Wee Baby Belling"	53 "Big Baby Belling"	29	C.49	C.51	C8
Type	Vertical	Vertical	"Baby"	"Baby"	—	Table cooker	Vertical, flush to floor	Vertical, flush to floor	Vertical, legs
Size (height, width & depth in inches)	37×23½×23	36×21×21	20×15½×18	11¾×11½×13¾	36×21×16	9×16½×12	36×21×21 (plus 9in splashplate)	36×21×21 (plus 9in splashplate)	36×21×21 (plus 9in splashplate)
Oven type	Removable one piece	Removable one piece	Fixed	Fixed	Fixed	—	Fixed	Fixed	Fixed
Oven size (height, width & depth, in)	16×15×13	13×13×16	11½×13×13	9¼×9×9¼	11½×11½×11½	—	13½×13½×15	13½×13½×15	13½×13½×15
Oven loading	3·4 kW	2·5 kW	1·2 kW	600 W	1 kW	—	2,200 W	1,800 W	2,200 W
Type of element	—	—	—	—	—	—	Plug-in side and bottom	Plug-in side	Plug-in side and bottom
Oven control	Thermostat	Thermostat	3-heat	3-heat	3-heat	—	Thermostat	Thermostat	Thermostat
Hotplates	One 8in 2½ kW and one 6in 1 kW, all "Simmerstat" controlled	One 8in 1·8 kW ("Simmerstat" controlled) and one 6in 1 kW (3-heat control)	—	—	One 8in 1·8 kW	—	One 8in 1,800 W and if required one 6½in 1,000 W solid (radiant extra)		
Grill or grill boiler	10½in×8in 2·3 kW grill boiler	10½in×8in 2·3 kW grill boiler	10½in×8in 2 kW grill boiler	9in×7in 1·75 kW grill boiler	10in×7in 2 kW grill boiler	10½in×8in 2 kW grill boiler	10½in×8in 2 kW grill boiler	10½in×8in 2 kW grill boiler	10½in×8in 2 kW grill boiler
Hotcupboard or grill compartment (height, width & depth in inches)	7×16½×16½	6×18½×15½	4½×17½×15	—	5×19×14	7×10¾×10¾	6¾×17×17¾	6¾×17×17¾	6¾×17×17¾
Storage drawer (height, width & depth in inches)	—	4×16×15	—	—	—	—	Large	Large	—
Storage drawer loading	—	—	—	—	—	—	—	—	—
Special features	Inner glass door, automatic oven flood light and (as extra) wheels with brake	Inner glass door	Available on stand (£2 4s extra), on cabinet (£4 8s extra)	—	Stand £2 extra. Cabinet £4 extra. Switch interlock limits load to 3 kW	—	Interchangeable 2/3 plate hob. Drop-down oven door	Interchangeable 2/3 plate hob	Interchangeable 2/3 plate hob
Finish	White or cream, black hob, vitreous throughout			Cream and black vitreous	Cream and black vitreous	White or cream & black vitreous	Two-tone ivory vitreous enamel	Two-tone ivory vitreous enamel	Mottled grey vitreous enamel
Price	£49 10 0	£32 5 0	£13 15 0	£6 19 6	£15 10 0	3-heat: £6 18 0 S'stat: £7 12 0	2-plt: £31 2 0 3-plt: £33 14 6	2-plt: £29 4 0 3-plt: £32 0 0	2-plt: £24 0 0 3-plt: £27 6 0

Manufacturer:	Carron		Dexray	English Electric		Falco			G.E.C.
Model	H.3	H.2	C.2	2009D	2011	15B	16B	"Royal"	DC114

Price	£49 10 0	£32 5 0	£13 15 0	£6 19 6	£15 10 0	3-heat: £6 18 0 S'stat: £7 12 0	2-plt: £31 2 0 3-plt: £53 11 6	2-plt: £29 4 0	2-plt: £24 0 0

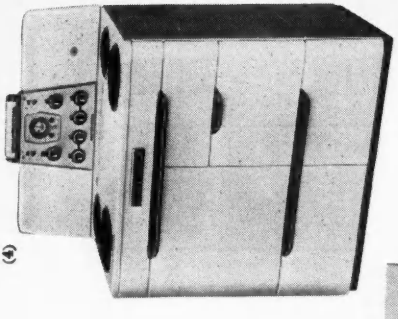
Manufacturer:	Carron		Dexray	English Electric		Falco			G.E.C.
Model	H.3	H.2	C.2	2009D	2011	15B	16B	" Royal "	DC114
Type	Vertical	Vertical	Breakfast	Cabinet, plinth	Cabinet, plinth	Vertical, plinth	Vertical, plinth	Vertical	Plinth
Size (height, width & depth in inches)	36×21×21	36×21×18¼	16×22×15	36×22×22½ (plus 6½in splashplate)	36×22×22½ (52½in to top of hob light)	36×22½×19½	36×22½×19½	36×23×23½ (49in to splash-plate)	44×21×21
Oven type	Removable sides and bottom	Removable sides and bottom	—	Fixed	Fixed	3-piece removable	3-piece removable	Removable	Three-piece removable
Oven size (height, width & depth in inches)	15×13½×15½	13×13½×14½	—	13½×15½×14	13½×15½×14	13×13×13	13×13×14½	16½×17½×15½	13½×15½×13
Oven loading	2,600 W	2,200 W	—	2,800 W	2,800 W	2,400 W	2,400 W	4,000 W	2,450 W
Type of element	Porcelain sections in sheet steel frame	Porcelain sections in sheet steel frame	—	Steel cased plug-in at sides, fixed rod elements below oven floor		Plug-in	Plug-in	Plug-in	Sheathed wire
Oven control	Thermostat	Thermostat	—	Thermostat	Thermostat	Thermostat	Thermostat	Thermostat. Manual or automatic timer	Thermostatic
Hotplates	One 8in 1,800 W and one 6½in 1,000 W solid	One 8in 1,800 W solid	Two 6½in	One 8in 1,800 W (" Simmerstat ") and one 6½in 1,000 W (3-heat)	One 8in 1,800 W and one 6½in 1,000 W (both " Simmerstat ")	One 8in solid 1,800 W, 3-heat	One 8in solid 1,800 W and one 6½in solid 1,000 W, 3-heat	Two 8in and one 6½in radiant, " Simmerstat " control	One 8in 1,800 W (" Simmerstat ") and one 6½in 1,000 W solid (3-heat)
Grill or grill boiler	10½in×8in 2,000 W solid grill boiler	10½in×8in 2,000 W solid grill boiler	7in×9½in 1,800 W grill boiler	10½in×8in 2,500 W grill boiler (3-heat)	10½in×8in 2,500 W grill boiler, " S'stat "	2 kW solid grill boiler, 3-heat	2 kW solid grill boiler, 3-heat	3 kW grill, " Simmerstat "	2,000 W grill boiler
Hotcupboard or grill compartment (height, width & depth in inches)	6½×17½×18½	6½×17½×12½	Grill compart-ment 7×11×14	5×18½×18½	5×18½×18½	5×18×13½	5×18×13½	4×17½×16	6½×17½×18½
Storage drawer (height, width & depth in inches)	5½×15½×19½	—	—	5½×18×17⅞	5½×18×17⅞	—	—	—	5½×13½×20
Storage drawer loading	500 W	—	—	—	—	—	—	—	400 W
Special features	Glass door, heated or unheated drawer to H.3, kettle plug attach-ment, kettle holder and (17s 6d extra) towel rail		—	One-piece hob cradle. Patent safety catch on oven door	Automatic control with timer, ringer, pilot &hob lights	Utensil drawer (£1 extra) if required		Automatic oven time switch, tubular light on splashplate	Drop-down type oven door
Finish	Cream with black or green hob	Cream with black or green hob	Vitreous and cream stove	Cream or white with black	White and dove grey, dappled grey interior	Cream, white or cream and green enamel	Cream, white or cream and green enamel	White vitreous enamel	Green and cream, two-tone ivory or white enamel
Price	£37 6 6 to £47 5 0	£30 8 6 to £37 13 6	£10 18 0	£37 0 0	£55 0 0	£26 17 6	£28 8 6	£85 0 0	£35 0 0

COOKERS . . . . . *continued*

Manufacturer:	General Electric Co., Ltd. (*continued*)					C. Hounslow & Co.			Jackson
Model	DC438 and DC438E	DC452, DC453 and DC553	DC752, DC753 and DC853	DC1034	DC138 Junior Cooker	"Chalex" 3-heat	"Regal"	"Chalex Bijou"	190J
Type	Leg or plinth	Leg or plinth	Leg	Leg	Table model	Table	Breakfast	Table or on stand	Vertical, legs
Size (height, width & depth in inches)	41½×20¾×19½	43¾×21×17	43¾×21×21	44×29½×23½	14×20×14	7¾×11¼×17	7×9½×12½	13×13×19	36×21×17¾
Oven type	One-piece removable	Three-piece removable	Three-piece removable	One-piece removable	Fixed	—	—	Fixed	Removable element guards
Oven size (height, width & depth in inches)	11½×13¾×13½	12⅜×14½×13½	12⅜×16¾×13½	16×18×18	12×12×10	11½×10½×6¼	11×8×4	9×11×11½	12⅝×12½×13¼
Oven loading	2,250 W	2,250 W	2,500 W	4,050 W	800 W (plus grill boiler)	—	—	1,250 W	1,775 W
Type of element	Fireclay panel	Fireclay panel	Fireclay panel	Fireclay panel	Fireclay panel	Wired porcelain	—	Wired porcelain	Spirals in ceramic tubes
Oven control	Thermostatic	Thermostatic	Thermostatic	Thermostatic	"On-off" switch	3-heat	—	3-heat, two switches	Thermostat or 3-heat
Hotplates	One 8in 1,800 W solid (3-heat)	One 8in 1,800 W solid (3-heat)	One 8in 1,800 W and one 6½in 1,000 W solid (3-heat)	One 8in and two 7in solid (3-heat)	—	—	—	One 5½in 750 W	One 8in 1,800 W solid, 3-heat switch
Grill or grill boiler	2,000 W grill boiler	2,000 W grill boiler	2,000 W grill boiler	2,700 W grill boiler	2,000 W grill boiler	1,800 W grill boiler	9in×7in 750 W grill boiler	—	10½in×8in 2,000 W grill boiler
Hotcupboard or grill compartment (height, width & depth in inches)	6×19×13	6×17½×12½	6×17½×15½	6×21½×19	—	—	—	—	4½×18×13¾
Storage drawer (height, width & depth in inches)	—	Unheated drawer optional	Unheated drawer optional	—	—	—	—	—	—
Storage drawer loading	—	—	—	—	—	—	—	—	—
Special features	—	—	—	—	Plate warming compartment	—	—	—	—
Finish	Mottled grey vitreous enamel	Two-tone ivory or green and cream vitreous enamel	Two-tone ivory or green and cream vitreous enamel	—	Mottled grey vitreous enamel	Grey mottled stove enamelled	Grey mottled stove enamelled	Grey mottled stove enamelled	Grey splash or green and cream vitreous enamel
Price	Leg: £21 15 0 Plinth: £22 10s	Leg: £24 10 0 Plinth: £26 Drawer: £27	Leg: £28 0 0 Plinth: £29 Drawer: £30	£52 10 0	£11 8 0	£6 11 3	£2 13 2	£8 11 11	£24 0 0 (plinth 10s extra)

Manufacturer:	Jackson (*continued*)			Moffats (Overseas)				Parnall (Yate)	
Model	191J	192J	194J	1225	1164	1144	1054	EC6/15	EC12C
Type	Vertical, legs	Vertical, legs	Vertical, legs	Table	Table	Table	Table	Table	Table
Size (height, width & depth in inches)	36×21×17¾	36×21×17¾	36×21×17¾	14×20×14	14×20×14	14×20×14	14×20×14	7¾×11¼×17	7¾×11¼×17
Oven type	Removable element guards	Removable element guards	Removable element guards	Fixed	Fixed	Fixed	Fixed	—	—
Oven size (height, width & depth in inches)	12⅝×12½×13¼	12⅝×12½×13¼	12⅝×12½×13¼	12×12×10	12×12×10	12×12×10	12×12×10	11½×10½×6¼	11½×10½×6¼
Oven loading	1,775 W	1,775 W	1,775 W	800 W (plus grill boiler)	800 W (plus grill boiler)	800 W (plus grill boiler)	800 W (plus grill boiler)	—	—
Type of element	Spirals in ceramic tubes	Spirals in ceramic tubes	Spirals in ceramic tubes	Fireclay panel	Fireclay panel	Fireclay panel	Fireclay panel	Wired porcelain	Wired porcelain
Oven control	Thermostat or 3-heat	Thermostat or 3-heat	Thermostat or 3-heat	"On-off" switch	"On-off" switch	"On-off" switch	"On-off" switch	3-heat	3-heat
Hotplates	One 8in 1,800 W solid, 3-heat switch	One 8in 1,800 W solid, 3-heat switch	One 8in 1,800 W solid, 3-heat switch	—	—	—	—	—	—
Grill or grill boiler	10½in×8in 2,000 W grill boiler	10½in×8in 2,000 W grill boiler	10½in×8in 2,000 W grill boiler	2,000 W grill boiler	2,000 W grill boiler	2,000 W grill boiler	2,000 W grill boiler	1,800 W grill boiler	1,800 W grill boiler
Hotcupboard or grill compartment (height, width & depth in inches)	4½×18×13¾	4½×18×13¾	4½×18×13¾	—	—	—	—	—	—
Storage drawer (height, width & depth in inches)	—	—	—	—	—	—	—	—	—
Storage drawer loading	—	—	—	—	—	—	—	—	—
Special features	—	—	—	Plate warming compartment	Plate warming compartment	Plate warming compartment	Plate warming compartment	—	—
Finish	Grey splash or green and cream vitreous enamel	Grey splash or green and cream vitreous enamel	Grey splash or green and cream vitreous enamel	Mottled grey vitreous enamel	Mottled grey vitreous enamel	Mottled grey vitreous enamel	Mottled grey vitreous enamel	Grey mottled stove enamelled	Grey mottled stove enamelled
Price	£24 0 0 (plinth 10s extra)	£24 0 0 (plinth 10s extra)	£24 0 0 (plinth 10s extra)	£52 10 0	£41 8 0	£36 11 3	£32 13 2	£8 11 11	£11 8 0

Manufacturer:	Jackson (continued)			Moffats (Overseas)				Parnall (Yate)	
Model	191J	192J	194J	1225	1164	1144	1054	EC6/15	EC12C
Type	Vertical, legs	Vertical	Vertical	Horizontal	Horizontal	Horizontal	Vertical	Vertical with warming drawer	Vertical with warming drawer
Size (height, width & depth in inches)	36×21×21	36×21×17¾	36×21×21	44⅜×39½×25¼	44⅜×39½×25¼	44⅜×39½×25¼	48½×22¾×25¼	36×21×19 (42in high to splashplate)	36×23×25 (40in high to splashplate)
Oven type	Removable element guards	Removable element guards	Removable element guards	Fixed Two ovens	Fixed	Fixed	Fixed	Fixed	Fixed
Oven size (height, width & depth, in)	12⅜×12½×16½	12⅜×12½×13½	12⅜×12½×16½	14×16⅜×20	14×16⅜×20	14×16⅜×20	14×16⅜×20	13×12¾×14¾	11½×14⅝×16¾
Oven loading	2,100 W	1,780 W	2,100 W	Grill: 3 kW Bottom: 1·5 kW	Grill: 3 kW Bottom: 1·5 kW	Grill: 3 kW Bottom: 1·5 kW	—	2,500 W	4,000 W
Type of element	Spirals in ceramic tubes	Spirals in ceramic tubes	Spirals in ceramic tubes	"Conrad"	"Conrad"	"Conrad"	"Conrad"	Sheathed side elements	Sheathed, top and bottom
Oven control	Thermostat or 3-heat	Thermostat	Thermostat	Thermostat	Thermostat	Thermostat	Thermostat	2-stage thermostat	3-stage thermostat
Hotplates	One 8in 1,800 W and one 6½in 1,000 W solid, 3-heat switches	One 8in 1,800 W solid, 3-heat switch	One 8in 1,800 W and one 6½in 1,000 W solid, 3-heat switches	Two 8in Three 6½in	Two 8in Two 6½in	Three 6½in One 8in	Three 6½in One 8in	One 8in 1,800 W One 6½in 1,000 W 3-heat switch or "Simmerstat"	Two 8in 1,800 W Two 6½in 1,000 W 3-heat switch or "Simmerstat"
Grill or grill boiler	10½in×8in 2,000 W grill boiler	10½in×8in 2,000 W grill boiler	10½in×8in 2,000 W grill boiler	Grill	Grill	Grill	Grill	Grill boiler, solid or radiant, to order (2,000 W)	Grill in top of oven (2,000 W)
Hotcupboard or grill compartment (height, width & depth in inches)	4½×18×18½	4½×18×13¾	4½×18×18½	10×14×21½	14×20×16⅝	14×20×16⅝	10×14×21½	6½×19×15¾	—
Storage drawer (height, width & depth in inches)	—	4¼×16¼×14¼	4¼×16¼×18½	10×14×21½	10×14×21½	10×14×21½	10×14×21½	5½×18⅝×17	5¾×19×15¼
Storage drawer loading	—	400 W	400 W	500 W	500 W	500 W	500 W	500 W	500 W
Special features	—	Glass panel door with outer door, "Cleanlite" cream splash vitreous enamel oven interior		All have automatic control of ovens from built-in clock. 1225 and 1164 also have automatic control of hotplates				Magnetic door catch on oven and hotcupboard	Drop down balanced oven door
Finish	As for 190J	Two-tone ivory or all white vitreous enamel		White titanium enamel	White titanium enamel	White titanium enamel	White titanium enamel	White or cream vitreous enamel	White or cream vitreous enamel
Price	£27 6 0 (plinth 10s extra)	Cold drawer: £31 7 6 Heated drawer: £33 2 0	Cold drawer: £36 9 6 Heated drawer: £38 4 0	£153 10 0	£125 0 0	£113 10 0	£89 10 0	Available on application (export only)	



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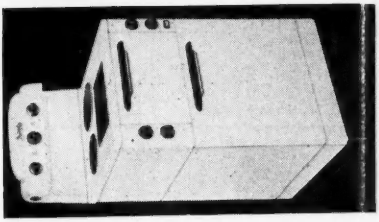

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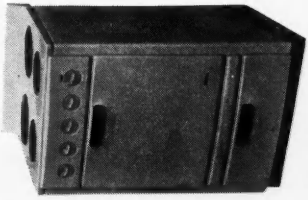

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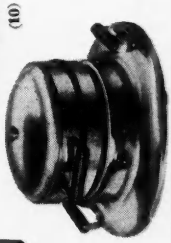

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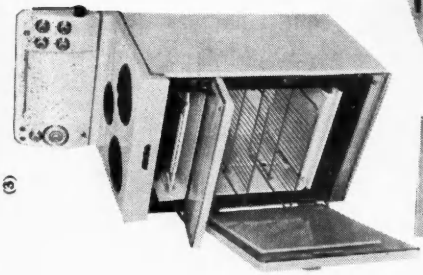

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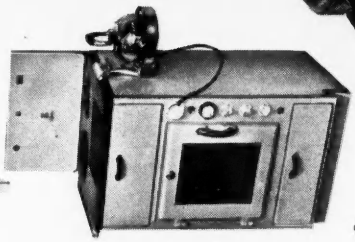

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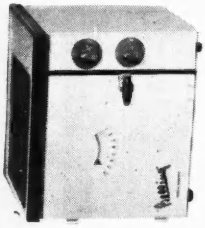

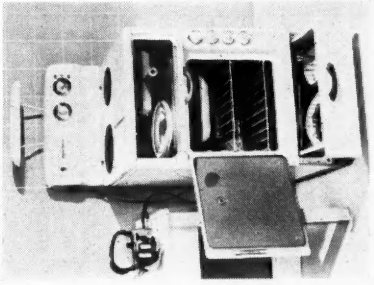

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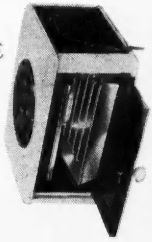

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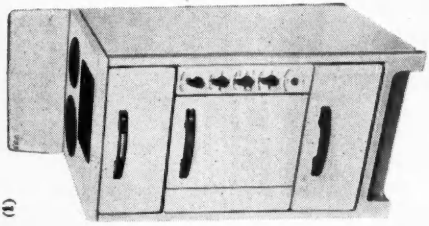

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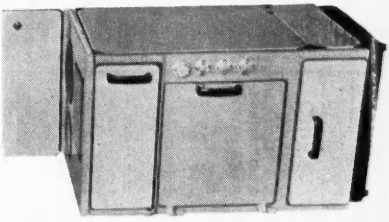

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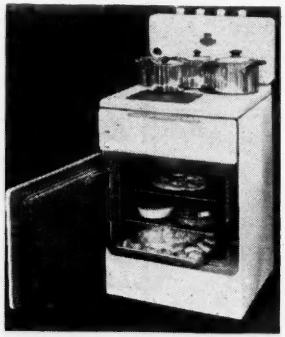

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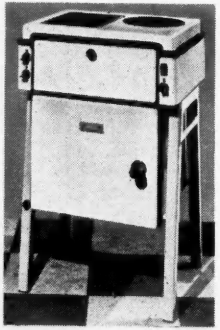

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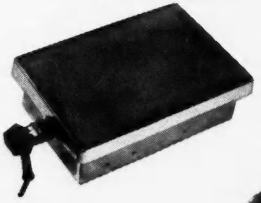

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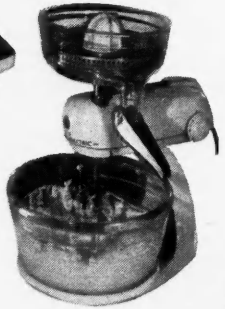

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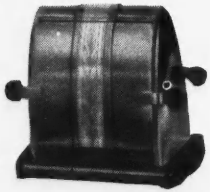

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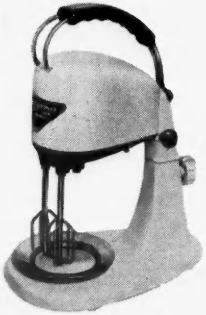

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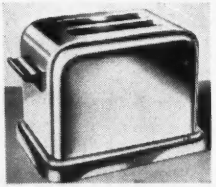

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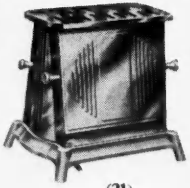

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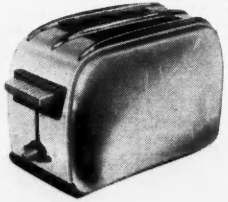


(22)

(23)

(1) G.E.C. 114 cooker with drop-down door. **(2)** "Wee Baby Belling." **(3)** Falco "Royal de luxe." **(4)** Simplex "Creda Super Comet" DH.6 cooker. **(5)** B.N.E. Model C.51. **(6)** English Electric 2011. **(7)** Vidor portable cooker. **(8)** Carron H3 cooker. **(9)** S.L.R. "Brownie" waffle maker (£4 7s 6d). **(10)** Parnall (Yate) EC12C cooker. **(11)** Tricity "Queen." **(12)** Revo "Monarch" cooker. **(13)** Jackson "Two Ninety" cooker. **(14)** The F. & F. "Fortune" griller hotplate (£2 9s 6d) has a pull-out drawer. **(15)** English Electric food mixer (£14 11s, plus £5 6s 5d P.T.) is available in white and cream, with mincing and juice extracting attachments (extra). **(16)** L. G. Hawkins "Tiffee" (75s) automatically makes tea in eight minutes and switches itself off. The a.c. model costs £3 15s, the d.c. £4 2s 6d. **(17)** The Metrovick "Redring" radiant boiling plate is made in 6¼in, 7in, 8in and 8½in diam. sizes. The 8in double element unit above costs £3 12s. **(18)** This attractive chromium plated two-slice toaster (L. G. Hawkins) has an easy-turn device. It costs £1 19s 6d. **(19)** The Easipower "Kitchen Princess" food mixer (£11 0s 6d, plus £4 2s 6d P.T.) has an adjustable power head with three speeds. **(20)** De Renzi, Holmes "Deren" automatic two-slice toaster (£3 17s 6d). **(21)** The design of the Ormond toaster (£1 17s 6d) is both neat and practical. **(22)** Falks U.95625 automatic two-slice toaster (£5 19s 6d). **(23)** The British Vacuum Cleaner & Engineering Co.'s "Goblin Tele-T" automatic teamaker (model D.24) costs £4 15s. It can also be used for making coffee

COOKERS . . . . . *continued*

Manufacturer:	Revo							Simplex ("Creda")	
Model	"Monarch"	"Princess" 461	"Princess" 463	"Princess" 464	R808	"Pearless"	"Pearl"	R.306	EV.12/13
Type	Vertical, plinth	Vertical, plinth	Vertical, plinth	Vertical, plinth	Vertical, legs or plinth	Horizontal	Horizontal	Vertical, with plinth	Vertical, plinth, legs or warming drawer
Size (height, width & depth in inches)	36×23×24 plus splashplate 12in	36×21×18	36×21×20	36×21×21	35¼×21¾×16¼	17⅞×21×15 (36in on stand)	17⅞×21×15 (36in on stand)	36×22½×16 (Splashplate 6in)	36×21×19½ (Splashplate 7in)
Oven type	Removable	One piece, removable	One piece, removable	One piece, removable	Removable	Fixed	Fixed	Removable	Removable
Oven size (height, width & depth in inches)	14×15⅞×13¾	13½×12¼×13½	13½×12⅝×13¼	13½×12¼×16¾	13½×12¼×13¼	12¼×11⅝×13	12¼×11⅝×13	13¼×12¾×12½	13¾×13×13½
Oven loading	2·1 kW	2·1 kW	2·1 kW	2·5 kW	1·9 kW	900 W bottom plus grill boiler	900 W bottom plus grill boiler	2,000 W	2,500 W
Type of element	Sheathed	Sheathed	Sheathed	Sheathed	Sheathed	Semi-radiant	Semi-radiant	Plug-in	Plug-in
Oven control	Thermostat	Thermostat	Thermostat	Thermostat	Thermostat	Thermostat	3-heat	3-heat	Thermostat
Hotplates	Two 8in 1,800 W	One 8in 1,800 W	One 8in 1,800 W One 6¼in 1,000 W	One 8in 1,800 W One 6¼in 1,000 W	One 8in 1,800 W	One 6¼in 1,000 W	—	One 8in 2,000 W solid (radiant extra)	EV.12: One 8in 2,000 W EV.13: Also one 6¼in 1,000 W solid
Grill or grill boiler	2,200 W grill boiler	2,200 W grill boiler	2,200 W grill boiler	2,200 W grill boiler	2,200 W grill boiler	2,000 W grill boiler	2,000 W grill boiler	2,000 W grill boiler	2,000 W grill boiler
Hotcupboard or grill compartment (height, width & depth in inches)	5½×16¾×20	6½×18¾×13¾	6½×18¾×13¾	6½×18¾×13¾	5×17½×12½	10½×7×13	10½×7×12½	5½×21×12	5½×18½×14
Storage drawer (height, width & depth in inches)	—	5×16×13½	5×16×13½	5×16×13½	—	—	—	—	7½×16¾×17
Storage drawer loading	—	300 W	300 W	300 W	—	—	—	—	400 W
Special features	Eye level switches	—	—	—	—	Maximum consumption 3 kW	Maximum consumption 3 kW	—	—
Finish	Cream	Two-tone ivory or green and cream vitreous enamel	Two-tone ivory or green and cream vitreous enamel	Two-tone ivory or green and cream vitreous enamel	Pastel grey mottle with white panels or all two-tone ivory	Black and cream enamel	Black and cream enamel	Two-tone ivory or silver grey	Two-tone ivory, cream and green or silver grey
Price	£27 7 6	£28 0 0	£29 0 0	£33 10 0	£24 6 0	£18 15 0 Stand £1 17 6	£14 6 0 Stand £1 17 6	From £22 2 6	From £27 2 6

Manufacturer:	Simplex *(continued)*		Tricity				Vidor	
Model	"Comet,"	"Super Comet"	"Queen" 535	528	Double 528	473A	CN.784/785	

Manufacturer:	Simplex *(continued)*		Tricity				Vidor	
Model	"Comet," models DH.1–4	"Super Comet" DH.6	"Queen" 535	528	Double 528	473A	CN.784/785	
Type	Horizontal, plinth or legs	Horizontal, plinth	Vertical or horizontal	Vertical	Horizontal	Vertical	Horizontal, portable	
Size (height, width & depth in inches)	36×36×21 (Splashplate 8in)	36×36×25½ (Height to top of lamp 50½in)	36×22×22	36×19¾×16	36×40×16	36×19¾×15¼	6¼×12½×9½	
Oven type	Removable	Removable	Fixed	Removable (except top)	Removable (except top)	Removable (except top)	Fixed	
Oven size (height, width & depth, in)	15×14½×16⅜	15×14½×16⅜	14⅜×15⅜×14½	10½×11½×12¼	Two 10½×11¼×12¼	10½×11×12¼	4×10×8	
Oven loading	3,450 W	3,450 W	2,190 W	1,150 W	Two ovens each 1,150 W	1,150 W	(Heated by grill boiler)	
Type of element	Plug-in	Plug-in	Plug-in	Fixed	Fixed	Fixed	Spir.ceramic tube	
Oven control	Thermostat	Thermostat	Thermostat	Thermostat	Thermostat	3-heat	—	
Hotplates	DH.1 and 2: Three 8in 2,000 W. DH.3 and 4: Also one 6¼in 1,000 W	Two 8in 2,000 W Two 6¼in 1,000 W	One 8in 1,600 W radiant One 6¼in 1,000 W solid (both "S'stat")	One 6¼in 1,000 W solid (3-heat)	One 8in 1,800 W Two 6¼in 1,000 W solid (3-heat)	—	—	
Grill or grill boiler	1,500 W grill	1,500 W grill	2,250 W grill boiler	1,800 W grill boiler	Two 1,800 W grill boilers	1,800 W grill boiler	1,000 W grill boiler	
Hotcupboard or grill compartment (height, width & depth in inches)	5¼×13½×14¼	5¼×13½×14¼	8×13½×17	4×13×11½	Two grill compartments each 4×13×11½	4×16×13½	—	
Storage drawer (height, width & depth in inches)	5¼×13½×14¼	5¼×13½×16	—	—	—	—	—	
Storage drawer loading	400 W	400 W	—	—	—	—	—	
Special features	Horizontal switch panel, built-in cupboard (DH.2–4)	Time clock, oven interior light	Automatic control, strip light, timer & "S'stat" controlled 13 A socket	Master selector switch	Four plates, two ovens	—	—	
Finish	Two-tone ivory or white	Cream or white	Natural ivory vitreous enamel	Ivory vitreous enamel	Ivory vitreous enamel	Ivory vitreous enamel	Vitreous enamel top	
Price	From £62 10 0	£94 10 0	£68 5 0	£22 16 6	£47 3 0	£16 18 3	£2 19 6	

THERMAL STORAGE WATER HEATERS

Manufacturer:	Aidas (" Sadia ")								
Name or model	—	—	—	—	" Select "	U.D.B.	U.D.B.	U.T.C.	C.E.L.
Type	Wall mounting free outlet	Wall mounting pressure	Wall mounting cistern	Floor mounting pressure	Rectangular wall mounting free outlet	Floor mounting	Wall mounting with ball tank	Under sink pressure or free outlet	Coal-electric floor mounting
Capacity	1½–15 gal	5–15 gal	5–15 gal	30–60 gal	3 gal	20–40 gal	20–35 gal	3 gal	30–40 gal
Loading	500 W–1,500 W	500 W–1,500 W	500 W–1,500 W	3 kW–9 kW	1 kW	Top: One 500 W Bottom: Five 500 W	2, 2½ or 3 kW	1½ kW	Top: One 500 W Bottom: Five 500 W
Finish	White with blue bands	White with blue bands	White with blue bands	White with blue bands	White with blue mouldings and chromium fittings	Mottled grey or white with blue bands	White with blue bands	White with blue bands	White with blue bands
Price (excl. tax)	£11 5 0 to £28 12 0	£16 0 0 to £27 12 0	£23 0 0 to £35 12 0	£47 0 0 to £86 2 0	£13 15 0 (other colours extra)	A.c.: £25 0 0 to £34 5 0 D.c.: £1 10 0 to £3 extra	A.c.: £32 to £39 D.c.: £1 10 0 extra	£12 12 0	A.c.: £36 6 to £42 7 0 D.c.: £1 10 to £3 extra
Purchase tax	£4 7 9 to £11 3 1	£6 4 10 to £10 15 4	£8 19 5 to £13 17 9	£18 6 8 to £30 1 5*	£5 7 3	A.c.: £9 15 0 to £13 7 2 D.c.: 11s 9d to £1 3 5 extra	A.c.: £12 9 8 to £15 4 3 D.c.: 11s 9d extra	£4 18 4	A.c.: £14 3 2 to £16 10 4

Manufacturer:	Aidas (" Sadia ")	Berry's Electric		British National Electrics (" B.N.E.")				Ferranti	
Name or model	C.E.L.	" New Look "	" New Look "	—	—	Twin	—	—	—
Type	Coal-electric wall mounting	Sink/Bath	Sink/Bath	Non-pressure	Pressure	Dual-purpose	Cistern	Wall mounting non-pressure	Floor mounting pressure
Capacity	30–35 gal	1½ gal	2½ gal	1½–12 gal	5–30 gal	20 & 30 gal	20 & 30 gal	1½–20 gal	12–60 gal
Loading	2, 2½ or 3 kW	750 W	1 kW	750 W to 1,500 W	1 kW to 3 kW	3 kW	3 kW	750W to 2,000W	1½ kW to 3 kW
Finish	White with blue bands	Pastel blue, white, cream, pastel green	Pastel blue, white, cream pastel green	Glossy white stove enamel, with mottled grey as alternative for " Twin " and cistern				White	White
Price (excl. tax)	A.c.: £41 5 0 to £44 11 0 D.c.: £1 10 extra	A.c.: £12 10 0 D.c.: £13 9 0	A.c.: £15 0 0 D.c.: £15 19 0	£11 10 0 to £24 14 0	£16 1 9 to £48 0 3	£26 0 0 & £30 10 0	£32 9 0 & £36 0 0	£10 19 6 to £35 3 6	£22 19 0 to £74 0 0
Purchase tax	A.c.: £16 1 9 to £17 7 6 D.c.: 11s 9d extra	A.c.: £4 17 6 D.c.: £5 4 11	A.c.: £5 17 0 D.c.: £6 4 5	£4 9 8 to £9 12 8	£6 5 6 to £18 14 6	£10 2 10 & £11 17 10	£12 13 1 & £14 3 2	£4 5 7 to £13 14 5	£8 19 0 to £20 9 6*

Manufacturer:	Ferranti *(contd.)*	General Electric Co., Ltd.							
Name or model	" Dulec "	DE821	DE823	DE825	DE1412	DE1312	DE1315	DE1220	DE1230
Type	Floor, pressure	Non-pressure	Non-pressure	Non-pressure	Non-pressure	Pressure	Pressure	Pressure	Pressure

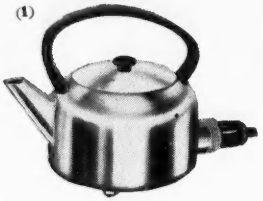
Purchase tax	A.c.: £16 1 9 to £17 7 6 D.c.: 11s 9d extra	A.c.: £4 17 6 D.c.: £5 4 11	A.c.: £5 17 0 D.c.: £6 4 5	£4 9 8 to £9 12 8	£6 5 6 to £18 14 6	£10 2 10 & £11 17 10	£12 13 1 & £14 3 2	£4 5 7 to £13 14 5	£8 19 0 to £20 9 6*

Manufacturer:	**Ferranti** *(contd.)*	**General Electric Co., Ltd.**							
Name or model	"Dulec"	DE821	DE823	DE825	DE1412	DE1312	DE1315	DE1220	DE1230
Type	Floor, pressure	Non-pressure	Non-pressure	Non-pressure	Non-pressure	Pressure	Pressure	Pressure	Pressure
Capacity	20 gal	1½ gal	3 gal	5 gal	12 gal	12 gal	15 gal	20 gal	30 gal
Loading	3 kW	750 W	1 kW	1 kW	1·5 kW	1·5 kW	1·5 kW	2 kW	3 kW
Finish	Mottled grey and white	White stove enamel	White stove enamel	White stove enamel	White stove enamel	White stove enamel	White stove enamel	White stove enamel	White stove enamel
Price (excl. tax)	£26 0 0 grey £27 0 0 white	£13 4 0	£14 17 0	£17 12 0	£29 14 0	£26 19 0	£30 16 0	£39 0 0	£50 12 0
Purchase tax	£10 2 10 grey £10 10 8 white	£5 3 0	£5 15 10	£6 17 4	£11 11 8	£10 10 3	£12 0 3	£15 4 3	£19 14 8

Manufacturer:	**General Electric Co., Ltd.**			**Heatrae**				**Hotpoint**	**Duncan Low**
Name or model	DE1715	DE1720	DE790	D.O.T.	F.B.	220	U.B.	3 gal	—
Type	Cistern	Cistern	"Dulec"-Pressure	Non-pressure	Cistern	Dual heat pressure	Under basin	Non-pressure	Pressure, combination, etc.
Capacity	15 gal	20 gal	20 gal	1½ gal	12 gal	20 gal	2 gal	3 gal	5–500 gal
Loading	1·5 kW	2 kW	500 W, 3 kW	750 W	1,500 W	3 kW	2 kW	1 kW	1–200 kW
Finish	White stove enamel	White stove enamel	Grey or white stove enamel	White	White	White	White	Cream	Stove enamel
Price (excl. tax)	£44 0 0	£53 1 6	£39 0 0	£11 5 0	£36 2 6	£30 4 0	£17 0 0	£16 2 6	—
Purchase tax	£17 3 3	£20 14 0	£15 4 3	£4 7 9	£14 1 9	£11 15 7	£6 12 7	£6 5 10	—

Manufacturer:	**Simplex ("Creda")**				**W. H. Smith & Co. ("Eziot")**				
Name or model	"Dulec"	C.7512P, etc.	C.7501, etc.	C.7505BR, etc.	Sealed unit	WT	BWT	PWT	UWT
Type	Double-purpose	Pressure	Non-pressure	Cistern	Non-pressure	Non-pressure	Cistern	Floor, pressure	Under basin
Capacity	18·7 gal	12–100 gal	1½–20 gal	5–100 gal	1½ gal	1½–20 gal	3–20 gal	16–100 gal	1½–3 gal
Loading	Top: 500 W Bottom: 2,500 W	1,500–6,000 W	750–2,000 W	750–6,000 W	750 W	750 W–2 kW	750 W–2 kW	1½–9 kW	750 W–2 kW
Finish	Mottled grey enamel	White	White	White	White, cream, eau-de-nil	White, cream, eau-de-nil	White, cream, eau-de-nil	White, cream, eau-de-nil	White, cream, eau-de-nil
Price (excl. tax)	From £26 0 0	From £22 5 0	From £11 5 0	From £22 0 0	£10 17 6	£12 12 0 to £38 17 6	£18 5 0 to £47 10 0	£28 17 6 to £127 15 0	£12 2 6 to £18 15 0
Purchase tax	From £10 2 10	From £8 13 7	From £4 7 9	From £8 11 8	£4 4 10	£4 18 3 to £15 3 3	£7 2 4 to £10 10 6	£11 5 3 to £22 10 5*	£4 14 7 to £7 6 3

* Above 40 gal tax free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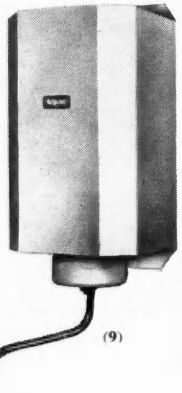
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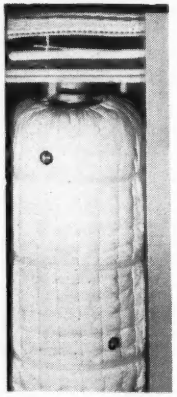
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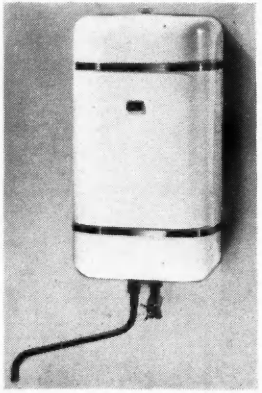
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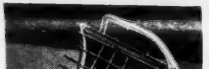
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(1) The Cassirer "Lincass" 4 pint chromium kettle is fitted with an element loaded at 1,000 W (£3 15s) or 1,500 W (£3 17s). (2) The Hague & McKenzie "Pyramid" ground base coffee percolator for use on electric hotplates is made in 1½, 2 and 2½ pint sizes with polished aluminium or chromium finishes. Prices range from £2 0s 9d to £3 6s 9d. (3) The F. & F. "Fortune" kettle is made in polished aluminium and incorporates an automatic cut-out in the 1,500 W immersion element. The price is £2 17s 6d. (4) Dishwashing is faster, simpler, cleaner and safer in this Dishmaster machine (£99 10s, plus £32 6s 9d P.T.). (5) Drake & Gorham

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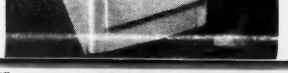

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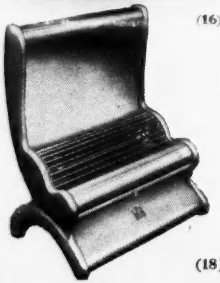

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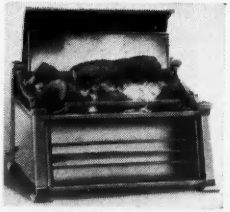

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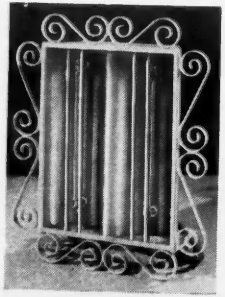

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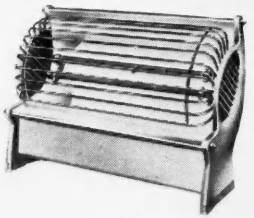
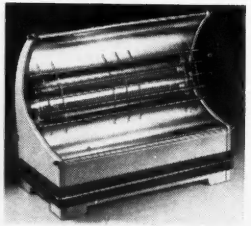


(26)

(1) The Cassirer "Lincass" 4 pint chromium kettle is fitted with an element loaded at 1,000 W (£3 15s) or 1,500 W (£3 17s). **(2)** The Hague & McKenzie "Pyramid" ground base coffee percolator for use on electric hotplates is made in 1½, 2 and 2½ pint sizes with polished aluminium or chromium finishes. Prices range from £2 0s 9d to £3 6s 9d. **(3)** The F. & F. "Fortune" kettle is made in polished aluminium and incorporates an automatic cut-out in the 1,500 W immersion element. The price is £2 17s 6d. **(4)** Dishwashing is faster, simpler, cleaner and safer in this Dishmaster machine (£99 10s, plus £32 6s 9d P.T.). **(5)** Drake & Gorham "Dragor" immersion heaters are supplied with both 2 and 3 kW loadings and immersed lengths from 12 to 42in. **(6)** L. G. Hawkins "Dinky" 3 gal general utility boiler (£3 9s 6d). **(7)** The "Sunco" 4 pint 1,250 W kettle is now supplied in chromium finish instead of polished aluminium. The price is £3 5s. **(8)** Walls "Walco" No. 435 percolator (£1 10s) has a separate hotplate base which can be used for warming dishes. **(9)** Hotpoint 3 gal sink model water heater. **(10)** The use of Hurseal insulating jackets and insulating materials is claimed to reduce the cost of hot water by half. **(11)** The Best "Fanfare" 4 pint 1,500 W kettle (polished aluminium £3 7s 6d, chromium £4 15s) gives a loud chord warning when the water is boiling. **(12)** Simplex "Creda Redhead" immersion heater. **(13)** This Bray immersion heater is fitted with a 2 or 3 kW "Tubalox" sheathed wire element and incorporates a thermostat pocket. It is available with immersed lengths of from 11½ to 30in. The basic price is £2 15s 3d, plus £1 10s 5d P.T. **(14)** Berry's "New Look" water heater. **(15)** This Arcason dishwasher (£70, plus £28 P.T.) is also available in modified form (£60, plus £24 P.T.) for fitting into an existing sink unit or draining board. **(16)** W. T. French "Countess" fire. **(17)** Dowsing N.151 fire. **(18)** Falks "County" reflector/convector fire combines a 750 W convertor with a 1,250 W reflector element. **(19)** M.E.M. 2 kW "Reflex" fixed reflector fire. **(20)** Grafton 2 kW reflector fire. **(21)** M.E.M. outset fire. **(22)** The Dexray "R.10" 1 and 2 kW reflector fires, with wrought scroll work surrounds, are available in a variety of styles. **(23)** Illumination is provided under the reflector of the Ferranti "F.3117" 1,250/2,500 W fire. **(24)** G.E.C. wide angle dispersive reflector fire. **(25)** Hotpoint No. 93 fire. **(26)** Bratt Colbran No. 252 outset panel fire



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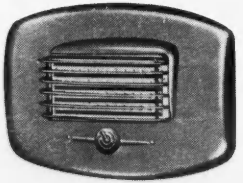

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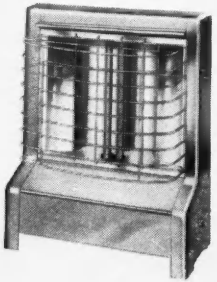

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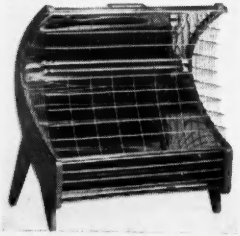

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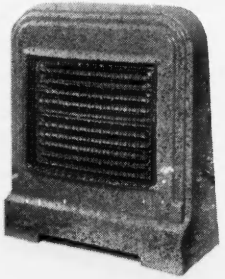

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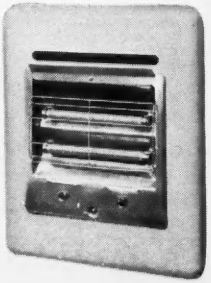


THERMAL STORAGE WATER HEATERS . . . . . *continued*

Manufacturer:	Santon								
Name or model	PT/FM	NPT/FM	NPT	"Chepstow"	PT	PT/FM	DF	DF/R	DF/FM
Type	Pressure, floor mounting	Non-pressure, floor mounting	Non-pressure	Unvented	Pressure, wall mounting	Pressure, floor mounting	Cistern, wall mounting	Rectangular cistern, wall mounting	Cistern, floor mounting
Capacity	2½ gal	2½ gal	1½–12 gal	1½ gal	5–20 gal	20–100 gal	5–20 gal	5 gal	20–100 gal
Loading	1 kW	1 kW	750–1,500 W	750 W	1–2 kW	2–6 kW	1–2 kW	1 kW	2–6 kW
Finish	White enamel	White enamel	White enamel	White enamel	White enamel	White enamel	White enamel	White enamel	White enamel
Price (excl. tax)	£16 10 0	£19 16 1	£12 0 0 to £28 2 6	£11 5 0	£15 12 6 to £36 0 0	£48 0 0 to £107 10 0	£23 15 6 to £43 17 6	£30 5 0	£57 0 0 to £130 0 0
Purchase tax	£6 8 8	£7 14 6	£4 13 7 to £10 19 5	£4 7 9	£6 1 11 to £14 0 10	£18 14 5 £21 9 0 (50 and 100 gal tax free)	£9 5 5 to £17 2 3	£11 16 0	£22 4 7 to £25 7 0 (50 and 100 gal tax free)

Manufacturer:	Santon	
Name or model	"Monmouth"	"Monmouth Junior"
Type	Automatic dual	Automatic dual
Capacity	20 gal	12 gal
Loading	Top heater 1 or 2 kW. Bottom heater 2 or 3 kW	Top heater 1 kW Bottom heater 2 or 3 kW
Finish	Copper or galvanized	Copper or galvanized
Price (excl. tax)	Copper: £29 Galvanized: 6 10 0	Copper: £26 7 6 Galvanized: £24 7 6
Purchase tax	Copper: £11 6 2 Galvanized: £10 6 8	Copper: £10 5 9 Galvanized: £9 10 2

FIRES

Manufacturer:	Arora			Bank Hardware Manufacturing Co.		
Name or model	410	375	303	EA.1	EV.1	EV.2
Type	Portable or wall mounting reflector	Portable reflector	Portable reflector	Portable	Portable	Portable
Elements	One 1 kW rod	Two 1 kW rod	Two 1 kW bar	One 750 W spiral	One 750 or 1,000 W spiral	Two 750 or 1,000 W spiral
Finish	Chrome & silver	Chrome & silver	Mottled cream vitreous enamel	Coloured vitreous enamel	Coloured vitreous enamel	Coloured vitreous enamel
Price (excl. tax)	£2 16 0	£4 15 0	£3 3 6	No fixed retail selling prices		
Purchase tax	£1 10 9	£2 12 3	£1 14 11			

Manufacturer:	A. Bell & Co.			Belling					
Name or model	CF6			"Hotspur"	"Diablo"	"Fusion"			
Type	Convector			Convector	Convector	Convector			
Elements	One 1 kW rod			One 1 kW rod	One 1 kW rod	One 1 kW rod			
Finish	Chrome & silver			Chrome & silver	Chrome & silver	Chrome & silver			
Price (excl. tax)	£2 16 0			£2 16 0	£3 3 0	£3 3 0			
Purchase tax	£1 10 9			£1 10 9	£1 14 11	£1 14 11			

	Galvanized: £10 6 8	Galvanized: £9 10 2								

Manufacturer:	A. Bell & Co.			Belling					
Name or model	CF6	—	—	"Hotspur"	"Dinkie"	"Empire"	"Solray"	"County"	"Adam"
Type	Portable reflector	Portable reflector	Inset reflector	Portable reflector	Portable firebar	Portable firebar	Portable or wall	Portable reflector	Period
Elements	Three 1 kW rod	Two 1 kW rod	Two 1 kW rod	One or two 1 kW rod	One or two 1 kW rod	One, two or three 1 kW bar	One or two 1 kW rod	Two or three 1 kW rod	Two or three 1 kW bar
Finish	Chrome	Chrome	Chrome	Silver, silver bronze, silver green	Silver, silver bronze, silver green	Beige or brown vitreous enamel	Cream & black	Ripple silver, ripple bronze, ripple green	Bright antique
Price (excl. tax)	£20 0 0	£8 10 0	£5 10 0	1 kW: £2 10 0 2 kW: £3 8 0	1 kW: £1 14 0 2 kW: £2 10 0	1 kW: £1 18 0 2 kW: £3 4 0 3 kW: £4 4 0	1 kW: £3 17 0 2 kW: £4 13 0	2 kW: £4 19 0 3 kW: £6 0 0	2 kW: £8 10 0 3 kW: £9 18 0
Purchase tax	£9 15 0	£4 2 11	£2 14 0	1 kW: £1 7 6 2 kW: £1 17 5	1 kW: £0 18 9 2 kW: £1 7 6	1 kW: £1 0 11 2 kW: £1 16 3 3 kW: £2 6 3	1 kW: £2 2 5 2 kW: £2 11 2	2 kW: £2 14 6 3 kW: £3 6 0	2 kW: £4 13 6 3 kW: £5 8 11

Manufacturer:	Belling								
Name or model	"Princess"	"Medieval"	"Waverley"	"Melrose"	"Converta"	"Hearth"	(C/1 & C/2)	F/2	G/2
Type	Imitation coal	Imitation fuel	Imitation coal	Illuminated	Fireplace screen	Imitation fuel	Firebar inset	Firebar inset	Reflector inset
Elements	Two or three 1 kW rod	Two 1 kW bar	Three 1 kW bar or rod	Three 1 kW bar or rod	Two 1 kW bar or rod	Two 1 kW bar	One or two 1 kW bar	Two 1 kW bar	Two 1 kW rod
Finish	Bronze, silver green, ripple	Antique	Beige or electro-plated bronze	Beige or electro-plated bronze	Ripple bronze	Bright antique	Electro-plated bronze	Electro-plated bronze	Electro-plated bronze
Price (excl. tax)	2 kW: £8 6 0 3 kW: £9 4 0	Coal: £11 10 0 Log: £13 10 0	Bar: £15 8 0 Rod: £16 15 0	Bar: £13 5 0 Rod: £14 12 0	Bar: £6 0 0 Rod: £7 8 0	Coal: £7 9 0 Log: £9 0 0	1 kW: £2 0 0 2 kW: £3 0 0	£3 8 0	£4 7 6
Purchase tax	2 kW: £4 11 4 3 kW: £5 1 3	Coal: £6 6 6 Log: £7 8 6	Bar: £8 9 5 Rod: £9 4 3	Bar: £7 5 9 Rod: £8 0 8	Bar: £3 6 0 Rod: £4 1 5	Coal: £4 2 0 Log: £4 19 0	1 kW: £1 2 0 2 kW: £1 13 0	£1 17 5	£2 8 2

Manufacturer:	Belling				Berry's Electric ("Magicoal")				
Name or model	Wall panel	"Homeguard"	"Celtic"	"Adam"	"Mayberry"	"Masterberry"	"Crestaberry"	"Adjustaberry"	606 panel heater
Type	Bar or reflector	Safety reflector	Period log	Period coal	Imitation fuel	Imitation fuel	Imitation fuel	Imitation fuel	Reflector
Elements	One or two 1 kW bar or rod	Two 1 kW rod	Three 1 kW	Three 1 kW	Two 1 kW rod	Four 500 W rod	Two 1 kW rod	Two 1½ kW bar	Two 1 kW rod
Finish	Ripple bronze	Ripple silver, bronze, green	Antique	Antique	Warm silver	Warm silver	Warm silver	Armour bright or polished	Cream stove enamel
Price (excl. tax)	£0 16 6	£7 13 0	£27 10 0	£26 5 0	£10 17 6	£13 13 0	£11 17 6	£10 10 0	£5 10 0
Purchase tax	£0 9 1	£4 4 2	£15 2 6	£14 8 9	£5 19 8	£7 10 2	£6 10 8	£5 15 6	£3 0 6

FIRES . . . . . *continued*

Manufacturer:	Berry's Electric ("Magicoal") *(continued)*								
Name or model	A.21/S "Berrylog"	A.21/O "Berrylog"	108 "Emberberry"	109 "Emberberry"	406 "Woodberry"	612 Radiator	628 "Vanguard"	112 "Homeberry"	880 "Raydair"
Type	Radiant, imitation fuel. Straight legs	Radiant, imitation fuel. Rosette dogs	Radiant, imitation fuel	Radiant, imitation fuel. With dogs	Radiant, imitation fuel	Reflector	Reflector	Reflector, imitation fuel	Radiator-convector
Elements	One 1½ kW bar	One 1½ kW bar	One 2 kW bar	One 2 kW bar	Two 1 or 1½ kW bar	Two 1 kW rod	Two 1 kW rod	Two 1 kW rod	1 kW, 1½ kW or 2 kW
Finish	Satin antique	Satin antique	Armour bright	Armour bright	Armour bright	Warm silver	Cream	Warm silver	Warm silver, peach bronze, penny bronze
Price (excl. tax)	£9 15 0	£10 10 0	£15 0 0	£17 5 0	£14 5 0	£6 7 6	£5 7 6 With safety switch: £6 7 6	£8 19 6	1 kW: £9 15 0 1½ kW: £13 17 6 2 kW: £20 5 0
Purchase tax	£5 7 3	£5 15 6	£8 5 0	£9 9 9	£7 16 9	£3 10 2	£2 19 2 With safety switch: £3 10 2	£4 18 9	1 kW: £5 7 3 1½ kW: £7 12 7 2 kW: £11 2 9

Manufacturer:	Berry's	Bescol	Bratt, Colbran ("Solectra")					British National Electrics	
Name or model	630 "Beryl"	"Swallow"	204	252	251	227 ("Sunrise")	253	F.101	F.102
Type	Portable reflector	Portable reflector	Outset	Outset	Inset	Imitation fuel	Portable	Portable refractory bar	Portable refractory bar
Elements	One 1 kW rod	Two 1 kW rod	One 1 kW rod	Two 1 kW rod	Two 1 kW rod	Three 833W rod	Two 1kW rod	One 1 kW bar	Two 1 kW bar
Finish	Warm silver and black	Chromium with cream stand	Lustral beige	Lustral beige	Chrome	Chrome	Black/chrome	Florentine bronze	Florentine bronze
Price (excl. tax)	£2 14 0	£3 12 0	£3 16 0	£5 3 6	£3 16 0	£14 3 6	£4 16 9	£2 0 0	£2 17 6
Purchase tax	£1 9 9	£1 19 7	£2 1 8	£2 16 1	£2 1 8	£7 15 6	£2 13 1	£1 2 0	£1 11 8

Manufacturer:	British National Electrics		Bulpitt & Sons ("Swan Brand")			Carron			
Name or model	F.103	F.104	820 "Waldorf"	831 "Woodstock"	832 "Woodstock"	"Sirus"	"Beaconette"	Pedestal	"Sunglo"
Type	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable firebar	Portable reflector	Portable reflector	Portable reflector
Elements	Two 1 kW rod	One 1 kW rod	One 1 kW rod	One 1 kW rod	Two 1 kW rod	One or two 1kW	One or two 1kW	One or two 1kW	Two 1,250 W
Finish	Black & ivory enamel	Chocolate & ivory enamel	Stove enamel	Stove enamel	Stove enamel	Vitreous enamel	Carrontine	Art silver	Chromium
Price (excl. tax)	£5 15 0	£2 10 0	£2 2 0	£4 0 0	£6 2 6	1 kW: £1 16 6 2 kW: £2 19 6	1 kW: £1 19 9 2 kW: £2 19 6	1 kW: £2 15 6 2 kW: £3 15 6	£8 2 3
Purchase tax	£3 3 3	£1 7 6	£1 3 1	£2 5 0	£3 9 0	1 kW: £1 0 1 2 kW: £1 12 9	1 kW: £1 1 10 2 kW: £1 12 9	1 kW: £1 10 6 2 kW: £2 1 6	£4 9 3

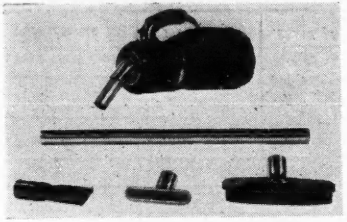
Manufacturer:	Cranmer & Cheshire ("Nichro")					A. D. Davidson			Dexray
Name or model	No. 422	No. 424	Nos. 426 & 429	No. 430	No. 438	F212	F215	F218	R.10
Type	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable reflector
Elements	One 1 kW rod	Two 1 kW rod	One 1 kW rod	Two 1 kW rod	Two 1 kW rod	One 1 kW rod	Two 1 kW rod	Two 1 kW rod	One 1 kW rod
Finish	Warm silver and black	Chromium with cream stand	Lustral beige	Lustral beige	Chrome	Warm silver and black	Chromium with cream stand	Chromium with cream stand	Warm silver and black
Price (excl. tax)	£2 14 0	£3 12 0	£3 16 0	£5 3 6	£3 16 0	£2 14 0	£3 12 0	£3 12 0	£2 14 0
Purchase tax	£1 9 9	£1 19 7	£2 1 8	£2 16 1	£2 1 8	£1 9 9	£1 19 7	£1 19 7	£1 9 9

						2 kW: £2 19 6	2 kW: £2 19 6	2 kW: £3 15 6		
Purchase tax	£3 3 3	£1 7 6	£1 3 1	£2 5 0	£3 9 0	1 kW: £1 0 1 2 kW: £1 12 9	1 kW: £1 1 10 2 kW: £1 12 9	1 kW: £1 10 6 2 kW: £2 1 6	£4 9 3	

Manufacturer:	Cranmer & Cheshire (" Nichro ")					A. D. Davidson			Dexray
Name or model	No. 422	No. 424	Nos. 426 & 429	No. 430	No. 438	F212	F215	F218	R.10
Type	Portable tilting reflector	Portable double tilting reflector	Wall fixing (bathroom)	Portable tilting reflector	Portable rigid reflector with glow lamp behind grille	Portable	Portable	Portable	Portable ornamental wrought iron
Elements	One or two 1 kW rod	Two 1 kW rod	No. 426: One 1 kW rod No. 429: One 750 W rod	One or two 750 W rod	Two 1 kW rod	One 750 W rod	One 1 kW rod	Two 1 kW rod	Two 1 kW rod
Finish	Silver grey	Silver grey	Silver grey	Silver grey	Silver grey	Cream/brown	Cream/brown	Cream/brown	Cream & gold
Price (excl. tax)	1 kW: £3 2 3 2 kW: £3 17 9	£5 5 0	No. 426: £3 4 0 No. 429: £3 0 6	750 W: £2 17 0 1,500 W: £3 11 0	£5 9 0	£1 12 6	£1 15 0	£5 3 0	£6 5 0
Purchase tax	**1 kW: £1 14 3 2 kW: £2 2 9**	**£2 17 9**	**£1 15 3**	**750 W: £1 11 4 1,500 W: £1 19 0**	**£3 0 0**	**£1 3 9**	**£1 5 7**	**£2 6 1**	**£3 10 0**

Manufacturer:	Dexray	Dowsing				Electroway			Falco
Name or model	R.15	N.102	N.112	N.121 & N.131	N.151	—	—	—	E.F.40
Type	Wall mounting (bathroom)	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable panel bar or reflector	Wall panel bar or reflector	Inset panel bar or reflector	Portable reflector
Elements	One 1 kW rod	One 750 W rod	One 1 kW rod	N.121: One 1 kW rod. N.131: Two 1 kW rod	Two 1 kW rod	One or two 1 kW bar or rod	One, two or three 1 kW bar or rod	One, two or three 1 kW bar or rod	One 1 kW rod
Finish	Cream & black	Cream enamel	Cream enamel	Cream enamel	Cream enamel	Stove enamel	Stove enamel or chromium	Stove enamel or chromium	Cream enamel
Price (excl. tax)	£3 10 0	£2 3 10	£2 18 2	N.121: £3 15 6 N.131: £4 16 7	£5 8 2	£1 2 11 to £2 11 0	£2 4 0 to £5 17 0	£1 11 6 to £5 15 0	£2 6 0
Purchase tax	£1 19 2	£1 4 1	£1 12 0	N.121: £2 1 6 N.131: £2 13 2	£2 19 6	£0 13 8 to £1 8 1	£1 4 2 to £3 4 4	£0 17 4 to £3 3 3	£1 5 3

Manufacturer:	Falco	Ferranti							
Name or model	E.F.35	P33132	P3310	W2781	W2782	F3090	F3096	F3111	F3117
Type	Portable reflector	Panel reflector	Panel reflector	Wall reflector	Wall reflector	Portable reflector	Portable reflector	Portable reflector	Port. refl'tor. illum
Elements	Two 1 kW rod	Two 1 kW rod	Two 1,250 W rod	One 1 kW rod	One 1,250 W rod	One 750 or 1,000 W rod	Two 750 or 1,000 W rod	Two 1,250 W rod	Two 1,250 W rod
Finish	Stove enamel, various shades	Chrome	Chrome	White or silver	White or silver	Cream, copper or silver	Cream, copper or silver	Silver or copper	Silver or copper
Price (excl. tax)	£5 0 0	£16 2 6	£24 10 6	£3 19 0	£4 10 0	£3 4 6	£5 0 0	£10 17 6	£12 5 0
Purchase tax	**£2 14 10**	**£8 17 5**	**£13 9 10**	**£2 3 5**	**£2 9 6**	**£1 15 6**	**£2 15 0**	**£5 19 8**	**£6 14 9**



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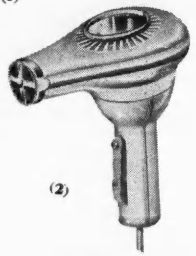

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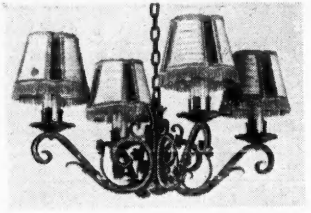

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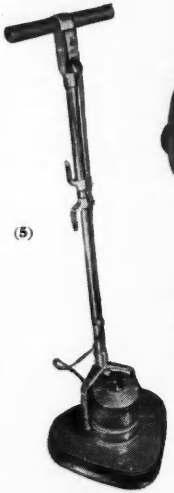

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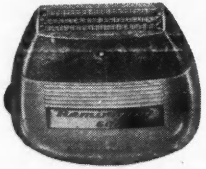

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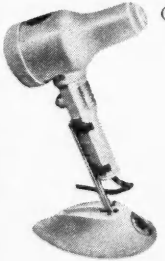

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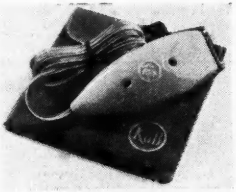

(12)

(1) Siroma model H.C.1012 hand cleaner (£6 13s 4d, plus £2 8s 9d P.T.). (2) The Bestfrend "Consort" hairdryer is supplied in walnut with ivory nosecap (£2 16s 10d, plus 10s 8d P.T.) or in ivory with red and blue switch and polished chrome nosecap (£3 4s, plus 12s P.T.). (3) One of a suite of fittings this Thomas Haywood & Sons "Falcon Forge" E22/4 electrolier costs £7 3s (£1 3s 10d P.T.). (4) Richard Quinnell three light wrought-iron pendant (£6, plus £1 P.T.). The black, ivory or green shades are extra. (5) Features of the Electrolux floor polisher (£23, plus £8 8s 2d P.T.) are the triple brush action and accessories comprising two sets of brushes and a set of felt discs, all readily interchangeable. (6) The 132 cutting blades of the Remington 60 dry shaver are claimed to give a shave in less than a minute. The standard model is £8 6s (£1 13s P.T.). (7) The Ormond hairdryer (£2 18s, plus 10s 10d P.T. in walnut, and £3 3s, plus 11s 10d in ivory, case extra) has convenient switches and a dual plug for easy connection. (8) Osler & Faraday O.P.1242 fitting (£11 18s 6d, plus £2 5s P.T.). (9) The Oswald Hollmann No. 2048 wall light (£4 12s 8d, plus £1 1s 7d P.T.) embodies an adjustable arm. (10) The Bylock "Queen" hairdryer in white plastic (£3 19s 6d, plus 14s 6d P.T.) can be supplied with a fully adjustable stand (17s 6d). (11) The Morphy Richards hairdryer is available in grey (£2 9s 6d, plus 9s 3d P.T.) or ivory (£2 14s 6d, plus 10s 2d P.T.). (12) A voltage control knob has now been incorporated in the Chilton "Kub" dry shaver (£3 7s 4d, plus 12s 7d P.T.)

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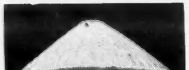

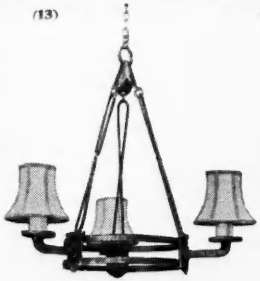

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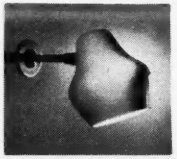

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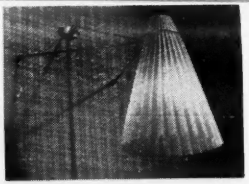

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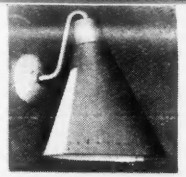

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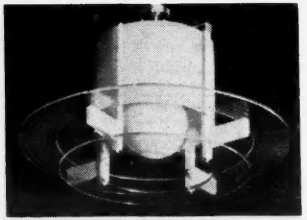

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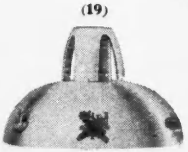

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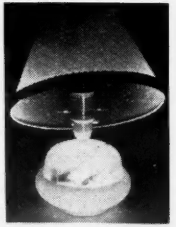

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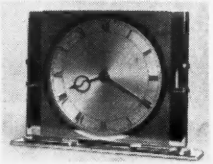

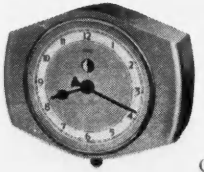

(24)

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(13) This Cranmer & Cheshire wrought iron pendant has an armour bright finish (£6 19s 1d, plus £1 3s 2d P.T.) or antique ivory (£7 4s 3d, plus £1 4s P.T.). **(14)** Merchant Adventurers MA 2201 P1 wall bracket (£3 1s 6d, plus 11s 6d P.T.). **(15)** This Speights lamp (£4 4s, plus £1 6s P.T.) is in white striped satin trimmed with velvet in a contrasting colour. **(16)** Ease of installation is a feature of this Cone Fittings adjustable wall light (£1 12s, plus 5s 3d P.T.). **(17)** Allom Bros. wall bracket B13 (£2 1s 4d, plus 7s 9d P.T.), with combined plastic and metal shade (£2 6s 8d, plus 8s 9d P.T.). **(18)** The Wraithe "Devon Major" 12in diam. pendant is available in a variety of colours. Its price is £1 18s 7d, plus 6s 5d P.T. **(19)** With gaily decorated figures, this Benjamin "Nursery Coolicon" is particularly appealing to children. It is made in 9in size taking a lamp up to 60 W and costs 8s (plus 2s P.T.). **(20)** The Derby Alabaster (Art Products) Co. combined television and reading lamp (£1 10s, plus 7s 6d P.T.) has its base illuminated from within. **(21)** The "Pifco" nursery lamp (16s 10d, plus 3s 1d P.T.) is made in plastic in pastel shades. It burns for 600 hours for 1 kWh. **(22)** Both reflector and rod are adjustable in this George Forrest floor standard (£7 5s, plus £1 11s 6d P.T.). **(23)** Peach or green mirror glass and chrome with a 6in silvered zone is used for the Ferranti No. 299 clock (£6 10s, plus £1 1s 5d P.T.). **(24)** The "Temco" No. 1602 moulded wall clock (T.M.C.–Harwell (Sales), Ltd.) is made in black or pastel shades, with chromium bezel and silvered zone and black hands. The price is £3 2s 6d (plus 10s 10d P.T.). **(25)** Chas. F. Bristol & Son No. 939 table lamp with pottery figure and parchment shade (£4 8s 6d, plus 19s 9d P.T.). **(26)** Linealux "700" series plastic fitting for tubular lamp (£1 3s 6d, plus 3s 11d P.T.)

FIRES . . . . . *continued*

Manufacturer:	Ferranti *(continued)*					Falk, Stadelmann ("Falks")			
Name or model	F3102	F3108	FS7250	F3123	P33122	95655/6 "Economist"	95691/2 "Sunray"	95670 Bathroom	95653 "Matchless"
Type	Portable reflector	Portable reflector	Reflector, available as portable, inset or outset	Reflector, available as portable, inset or outset	Panel reflector	Portable reflector	Reflector	Wall mounting reflector	Portable bowl
Elements	Two 750 W rod	Two 1 kW rod	One 1,250 W rod	Two 1 kW rod	Two 750 W rod	One or two 1 kW rod	One or two 1 kW rod	One 1 kW rod	One 600 W
Finish	Cream with clear polished or solium reflector	Cream with clear polished or solium reflector	Portable: "Ambronze" Inset and outset: Ditto and silver	Cream	Chrome	Cream enamel die-cast frame, black enamel die-cast feet	Cream enamel die-cast sides, chrome reflector	Cream enamel die-cast frame, black enamel die-cast feet	Cream enamel cast iron base, reflector with grid guard
Price (excl. tax)	£7 10 0	£8 8 0	£8 0 0	£10 3 6	£12 10 0	1 kW: £2 15 0 2 kW: £3 15 0	1 kW: £3 19 8 2 kW: £5 1 0	£3 5 0	£1 9 6
Purchase tax	£4 2 6	£4 12 5	£4 8 0	£5 11 11	£6 17 6	1 kW: £1 10 3 2 kW: £2 1 3	1 kW: £2 3 10 2 kW: £2 15 6	£1 15 6	£0 16 3

Manufacturer:	"Falks"	W. T. French ("Mysto")					H. Frost & Co. ("Sunhouse")		
Name or model	95666 "County" coal/log effect	No. 1002	No. 1202	"Major" No. 1271/2	"Volcano" No. 1129/2	"Countess" No. 1003	—	—	—
Type	750 W convector and 1,250 W reflector, imitation fuel	Bowl	Portable reflector (adjustable)	Portable firebar	Portable reflector (adjustable)	Portable reflector	Inset reflector	Panel and outset	Portable reflector
Elements	Two 1 kW rod	600 W	One 750 W rod	One or two 1 kW bar	One or two 1 kW rod	Two 1 kW rod	One or two 1 kW rod	One or two 1 kW rod	One or two 1 kW rod
Finish	Polished reflector, oxidized fire basket & frame	Green, bronze or metallic blue	Green, beige or metallic blue	Beige, green, hammered silver or hammered gold	Beige, green, hammered silver or hammered gold	Gold, metallic blue, hammered silver or hammered gold	Stove enamel or chromium	Stove enamel	Cream, chromium and matt black
Price (excl. tax)	£17 0 0	10 in: £1 4 0 12 in: £1 7 6	£1 13 6	1 kW: £1 7 6 2 kW: £2 7 6	1 kW: £2 3 6 2 kW: £2 17 0	£8 2 6	£1 15 10 to £5 8 4	£1 19 2 to £3 18 4	£2 3 4 to £4 11 8
Purchase tax	£9 7 0	10 in: £0 13 0 12 in: £0 15 0	£0 18 3	1 kW: £0 15 0 2 kW: £1 5 9	1 kW: £1 3 6 2 kW: £1 10 9	£4 8 0	£0 19 8 to £2 19 7	£1 1 7 to £2 3 1	£1 3 10 to £2 10 5

Manufacturer:	General Electric Co., Ltd.								
Name or model									
Type									
Elements									
Finish									
Price (excl. tax)									
Purchase tax									

Manufacturer:	General Electric Co., Ltd.								
Name or model	D2811G	D2852G	D2820	D2761G & D2762G	D2771G & D2772G	D2756G	DH2406G	D2342G	D2496G & D2497G
Type	Dispersive multi-parabola reflector	Dispersive multi-parabola inset reflector	Dispersive multi-parabola nursery reflector	Portable reflector (adjustable)	Portable reflector	Portable bowl reflector	Slot meter reflector	Portable cast-iron firebar	Portable sheet-metal panel
Elements	Two 1 kW rod	Two 1 kW rod	Two 1 kW rod	One or two 1 kW rod	One or two 1 kW rod	One 750 W	One or two 1 kW	Two 1 kW bar	One or two 1 kW bar
Finish	Bronze, cream or green	Bronze or chromium	Cream	Cream & green	Cream or green	Cream	Bronze	Beige or green	Beige, cream or green
Price (excl. tax)	£6 5 0	Bronze: £5 6 0 Chromium: £5 18 0	£7 10 0	1 kW: £3 3 8 2 kW: £4 17 8	1 kW: £3 17 0 2 kW: £5 19 8	£2 2 6	£22 15 0	£3 14 6	1 kW: £1 17 8 2 kW: £2 16 6
Purchase tax	£3 8 9	Bronze: £2 18 4 Chromium: £3 4 11	£4 2 6	1 kW: £1 15 0 2 kW: £2 13 9	1 kW: £2 2 4 2 kW: £3 5 10	£1 3 8	£14 4 5	£2 1 0	1 kW: £1 0 9 2 kW: £1 11 1

Manufacturer:	General Electric Co., Ltd.			Grafton		L. G. Hawkins		Heatrae	
Name or model	D2391G	D2392G	D2394G & D2395G	No. 9	106/36	"Sunray" LGH444	Pixie	4332 "Dandy"	4431 "Pilot"
Type	Inset wall	Inset wall	Cast-iron surface-mounting wall	Reflector	Bowl	Reflector	Reflector	Portable reflector	Portable reflector
Elements	One 1 kW bar	Two 1 kW bar	One or two 1 kW bar	Two 1 kW rod	600 W e.s.	1,500 W rod	750 W or 1 kW rod	Two 1 kW rod	One 1 kW rod
Finish	Bronze or chromium	Bronze or chromium	Beige vitreous enamel	Cream enamel	Various colours	Sprayed bronze	Green, ivory and mushroom	Ivory tan	Ivory tan
Price (excl. tax)	Bronze: £2 2 0 Chromium: £2 16 0 (Surround: £1 10 0)	Bronze: £3 6 0 Chromium: £4 0 0 (Surround: £1 10 0)	1 kW: £3 6 6 2 kW: £4 8 0	£3 0 0	£1 10 0	£5 3 6	£1 18 7	£6 4 0	£3 8 0
Purchase tax	Bronze: £1 3 1 Chromium: £1 10 10 (Surround: £0 16 6)	Bronze: £1 16 4 Chromium: £2 4 0 (Surround: £0 16 6)	1 kW: £1 16 7 2 kW: £2 8 5	£2 6 0	£0 12 6	£2 17 1	£1 1 4	£3 8 0	£1 17 4

FIRES . . . . . *continued*

Manufacturer:	H.M.V.			Hotpoint		C. Hounslow & Co.		Kego	Midland Elec. Mfg.
Name or model	"Bruton de Luxe"	"Portman"	"Welbeck"	30B	93	"Chalex" 3001	"Chalex" 3002	F100	"Mayfair"
Type	Portable duplex reflector	Portable reflector	Portable adjustable reflector	Bowl	Portable	Portable bar	Portable bar	Reflector bowl on wood stand	Portable radiant
Elements	Two 1 or 1½ kW rod	One or two 1 kW rod	One or two 1 kW rod	One 600 W plug-in	Two 1 kW flat bar	1 kW	2 kW	One 600 W	One or two 1 kW panel
Finish	Chromium with red base	Chromium with beige and red	Chromium with beige and red	Black and chromium	Vitreous enamelled	Beige stove enamel	Beige stove enamel	Polished copper	Choice
Price (excl. tax)	£9 19 10	1 kW: £4 5 5 2 kW: £5 6 4	1 kW: £4 16 8 2 kW: £5 19 3	£2 0 0	£4 0 0	£1 10 11	£2 12 6	On application	1 kW: £2 0 0 2 kW: £3 2 0
Purchase tax	£5 10 2	1 kW: £2 7 1 2 kW: £2 18 8	1 kW: £2 13 4 2 kW: £3 5 9	£1 2 1	£2 4 2	£0 17 1	£1 8 11		1 kW: £1 2 0 2 kW: £1 14 1

Manufacturer:	Midland Electric Manufacturing Co.			Morphy Richards				Premier	
Name or model	Outset	"Memray"	"Reflex"	CJ.750	CJ.15	CS.10	CS.20	"Paraglow"	"Jewel"
Type	Wall panel mounting	Portable reflector (adjustable)	Portable reflector (fixed)	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable reflector
Elements	One or two 1 kW panel	One or two 1 kW rod	One or two 1 kW rod	750 W rod	Two 750 W rod	One 1 kW rod	Two 1 kW rod	One or two 1 kW rod	One 1 kW rod
Finish	Choice	Choice	Choice	Green & ivory	Ivory	Green	Black	Cream or bronze	Cream or green
Price (excl. tax)	1 kW: £2 10 0 2 kW: £4 5 0	1 kW: £2 15 0 2 kW: £3 15 0	1 kW: £2 8 0 2 kW: £3 7 0	£1 19 6	£2 12 6	£2 5 0	£2 15 5	1 kW: £2 5 0 2 kW: £2 15 0	£1 17 6
Purchase tax	1 kW: £1 7 6 2 kW: £2 6 9	1 kW: £1 10 3 2 kW: £2 1 3	1 kW: £1 6 5 2 kW: £1 16 10	£1 1 9	£1 8 11	£1 4 9	£1 10 3	1 kW: £1 4 9 2 kW: £1 10 3	£1 0 8

Manufacturer:	Premier						Reeves		
Name or model	"Parabain"	"Parabeau"	"Parabon"	"Paravic"	"Guardian"	"Carlton"	R	R1 & R2	Adjustable
Type	Bathroom or kitchen reflector	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Reflector	Sheet steel portable reflector	Sheet steel portable	Cast aluminium portable reflector
Elements	One 1 kW rod	Two 1 kW rod	One 1 kW rod	Two 1 kW rod	Two 1 kW rod	Two 1 kW rod	One 1 kW rod	One or two 1 kW rod	One or two 1 kW rod
Finish	Ivory	Gilt	Pastel cream	Sprayed silver	Bronze	Gold, silver or copper	Various pastel shades	Various pastel shades	Bronze
Price (excl. tax)	£3 9 6	£4 19 6	£2 10 0	£3 15 0	£4 17 6	£12 0 0	£1 15 0	1 kW: £1 8 6 2 kW: £2 5 10	1 kW: £2 5 10 2 kW: £2 14 2
Purchase tax	£1 18 3	£2 14 9	£1 7 6	£2 1 3	£2 13 8	£6 12 0	£0 19 3	1 kW: £0 15 0 2 kW: £1 5 2	1 kW: £1 5 2 2 kW: £1 9 8

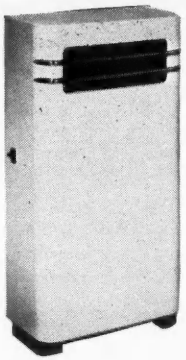
Manufacturer:	Revo					Simplex ("Creda")			
Name or model	"Reflexam"	"Dolphin"	"Revo-Inset"	"Revo-Outset"	"Tubula"	"Teal"	"Raven"	"Cygnet"	"Gnome"
Type	Portable reflector	Portable reflector	Wall panel mounting	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable bar

Purchase tax	£1 18 3	£2 14 9	£1 7 6	£2 1 3	£2 13 8	£6 12 0	£0 19 3	1 kW: £1 8 6 2 kW: £2 5 10	1 kW: £2 5 10 2 kW: £2 14 2
								1 kW: £0 15 0 2 kW: £1 5 2	1 kW: £1 5 2 2 kW: £1 9 8

Manufacturer:	**Revo**					**Simplex ("Creda")**			
Name or model	"Reflexam"	"Dolphin"	"Revo-Inset"	"Revo-Outset"	"Tubula"	"Teal"	"Raven"	"Cygnet"	"Gnome"
Type	Wall mounting adjust. reflector	Portable firebar	Inset with slabbing frame	Outset	Portable reflector	Portable reflector	Portable reflector	Portable reflector	Portable bar
Elements	One or two 1 kW rod	Two 1 kW firebar	One or two 1kW rod or firebar	Two 1 kW rod or firebar	One or two 1 kW rod	Two 1 kW rod	One 1 kW rod	Two 1 kW rod	Two 1 kW bar
Finish	Chromium plated & artshade silver	Beige vitreous enamel	Polished aluminium	Artshade bronze & polished aluminium	Chromium plated & artsbade silver	Shaded silver	Cream, grey or stone	Shaded silver	Stone or green vitreous enamel
Price (excl. tax)	1 kW: £3 2 6 2 kW: £4 5 0	£3 13 6	1 kW: £1 16 0 2 kW: £2 19 0	£3 10 0	1 kW: £2 17 6 2 kW: £3 17 0	£3 19 6	£2 12 0	£4 2 6	£3 13 6
Purchase tax	1 kW: £1 14 5 2 kW: £2 6 9	£2 0 5	1 kW: £0 19 10 2 kW: £1 12 6	£1 18 6	1 kW: £1 11 8 2 kW: £2 2 4	£2 3 10	£1 8 8	£2 5 6	£2 0 6

Manufacturer:	**Simplex ("Creda")**		**Sperryn & Co.**						**Telsen**
Name or model	"Marlow"	"Goodwood"	—	—	F4082/3	F801	—	—	—
Type	Imitation coal	Imitation coal	Portable	Portable	Portable screen	Bathroom	Wall panel	Inset	Portable cast iron
Elements	Two 1½ kW rod	Three 1 kW rod	One or two 1 kW bar	One or two 1 kW rod	Two 1 kW rod	One 1 kW rod	One or two 1 kW bar or rod	One or two 1 kW bar or rod	Two 1 kW bar
Finish	Old silver	Black and chromium or smoked ivory	Pastel green & beige vitreous enamel	Pastel green & beige vit.enamel: also oxy. silver	Pastel green & cream vitreous enamel	Chromium	Pastel green & cream vitreous enamel	Pastel green & cream vitreous enamel	Vitreous enamel
Price (excl. tax)	£13 4 0	£12 1 6	£2 7 4 to £4 2 4	£2 9 8 to £4 15 4	£6 12 0	£3 6 8	£2 14 0 to £4 8 0	£2 8 0 to £4 7 8	£3 15 0
Purchase tax	£7 5 6	£6 13 2	£1 6 1 to £2 5 3	£1 7 4 to £2 12 5	£3 12 7	£1 16 8	£1 9 8 to £2 8 5	£1 6 5 to £2 8 3	£2 2 2

Manufacturer:	**Tym's Electric ("Systym")**		
Name or model	"Warmglo"	"Sunshine"	—
Type	Portable	Portable	Bowl
Elements	One 750 W bar	One or two 750 W bar	One 650 W or 750 W
Finish	Various sprayed	Various sprayed	Polished aluminium
Price (excl. tax)	£0 19 6	750 W: £1 4 0 1500 W: £1 10 0	Not yet fixed
Purchase tax	£0 8 0	750 W: £0 11 0 1500 W: £1 0 0	—



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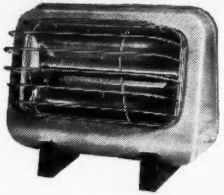

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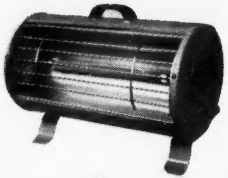

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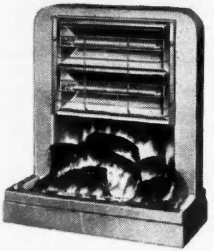

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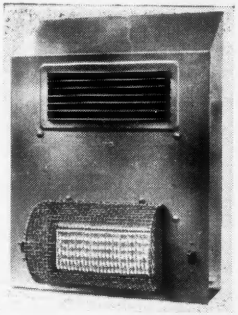

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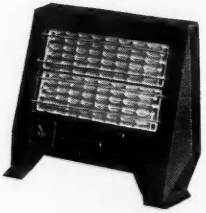

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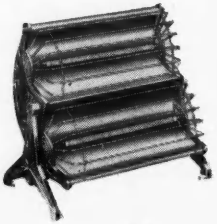

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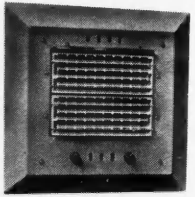

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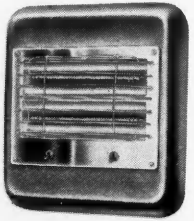

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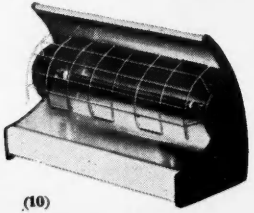

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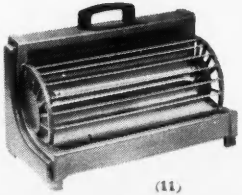

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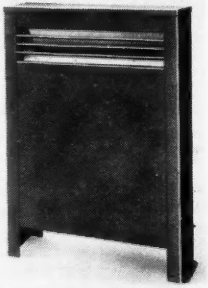

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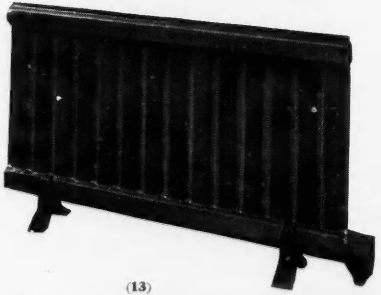

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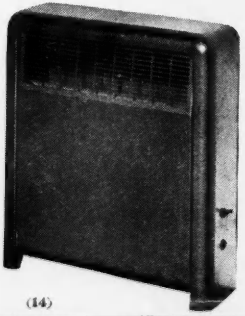

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(1) Bratt Colbran No. 209 convector. **(2)** Bulpitt "Woodstock" fire. **(3)** L. G. Hawkins "Pixie" 750 W or 1 kW safety fire. **(4)** Berry's "Homeberry" fire. **(5)** C. Hounslow & Co. "Chalex" dual-purpose wall mounting convector/radiator. **(6)** Telsen No. 1170 fire. **(7)** The Cranmer & Cheshire "Nichro" No. 424 2 kW fire has a double reflector. **(8)** Electroway model LG 2 onset fire. **(9)** "Rexo-outset" fire. **(10)** R.N.E.

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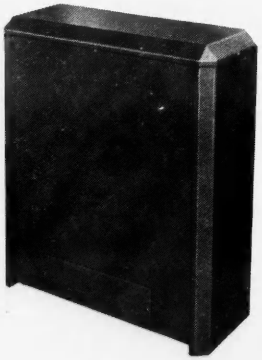

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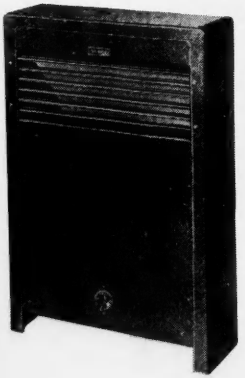

(1) Bratt Colbran No. 209 convector. **(2)** Bulpitt "Woodstock" fire. **(3)** L. G. Hawkins "Pixie" 750 W or 1 kW safety fire. **(4)** Berry's "Homeberry" fire. **(5)** C. Hounslow & Co. "Chalex" dual-purpose wall mounting convector/radiator. **(6)** Telsen No. 1170 fire. **(7)** The Cranmer & Cheshire "Nichro" No. 424 2 kW fire has a double reflector. **(8)** Electroway model I.G.2 onset fire. **(9)** "Revo-outset" fire. **(10)** B.N.E. model F.104. **(11)** Belling "Hotspur." **(12)** Electroway C2 or C3 convector. **(13)** Wall or panel type Hurseal oil-filled radiator. **(14)** "Kaloric-Mayfair" convector (M. & J. Lossos & Co., Ltd.). **(15)** The G.E.C. storage space heater gives heat at peak periods from off-peak supply. **(16)** De Renzi, Holmes "Deren" 2 kW convector. **(17)** The Hurseal-Leda towel rail, made in four sizes, employs a patented oil circulation system thermostatically controlled to 140 deg F. **(18)** "Thermovent" SRC1 (E. K. Cole) convector. **(19)** Hulme Atkins E.,599 convector with radiant bar. **(20)** E.C.D. air conditioners are made to suit customers' requirements. **(21)** The Magnetic Equipment Co.'s "Macco" portable air conditioner is useful for rooms which suffer from dampness. **(22)** Lan-Bar towel rail. **(23)** The Wardle "Maxheat" tubular heaters are made in all standard lengths from 2 to 17ft single or in banks, with 60 W or 80 W per ft loading. **(24)** This "Spiralux" portable fan heater (Spiral Tube & Components, Ltd.) costs £14 (plus £8 8s P.T.). It is available with loadings of 2 kW and 3 kW

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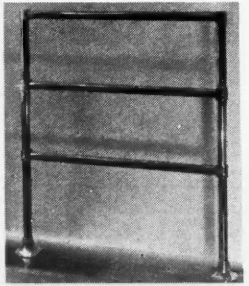

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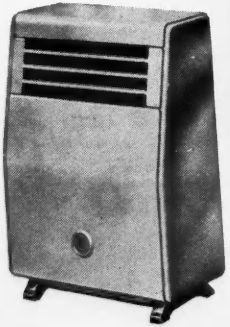

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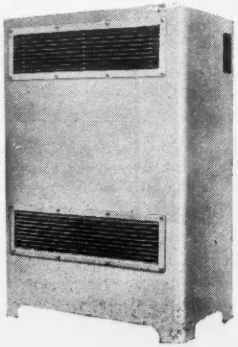

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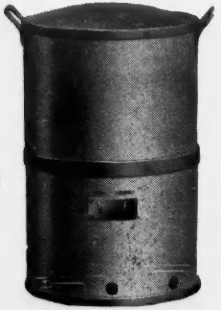

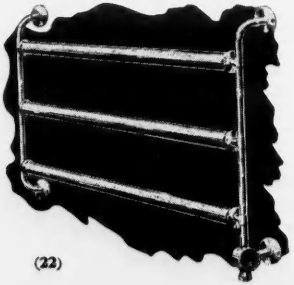

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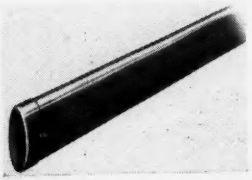

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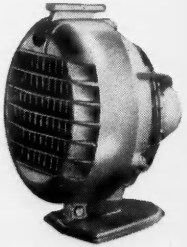


(24)

CONVECTION HEATERS

Manufacturer:	Arora			Belling					
Name or model	441	442	443	85	86	87	751	752	"Champion" 83A
Type	Portable	Floor fixing	Floor fixing	Wall fixing	Wall fixing	Corner wall fixing	Portable	Portable	Portable
Size (height, width & depth in inches)	22×18×6	30×22×6	30×22×6	22×6×5	22×12×5	22×9×6	24½×20½×8½	24½×37×8¾	25×13 diam
Elements	1 kW	2 kW	3 kW	750 W	1·5 kW	750 W	1 kW	2 kW	2·25 kW
Method of control	—	Step	Step	2-heat	2-heat	2-heat	1-heat	3-heat	3-heat
Casing	Steel	Steel	Steel	Metal	Metal	Metal	Metal	Metal	Metal
Finish	Bronze or silver green stove enamel	Bronze stove enamel	Bronze stove enamel	Ripple bronze	Ripple bronze	Ripple bronze	Dark ripple bronze	Dark ripple bronze	Ripple bronze
Price (excl. tax)	£6 10 0	£10 7 6	£10 17 6	£4 2 6	£6 14 0	£4 8 0	£6 14 0	£10 14 0	£4 8 0
Purchase tax	£3 11 6	£5 14 1	£5 19 7	£2 5 6	£3 15 9	£2 8 5	£3 13 9	£5 17 9	£2 8 5

Manufacturer:	Belling		Benham	Bescol				Bratt, Colbran	British National Electrics ("B.N.E.")
Name or model	"Champion" 91A	"Champion" 92A	"Electro-Vapour"	"Portable"	"Portable"	"Wall Heater"	"Hot-Tot"	209	P.20T
Type	Portable	Portable	Semi-portable	Portable	Portable	Wall mounting	Portable	Portable	Portable
Size (height, width & depth in inches)	23¼×9⅛ diam	23½×10½ diam	From 22×17×5½ to 28×33×8½	15½×11½×4½	28×18¼×6½	25×20×6	17 high × 11½ diam	29½×14×7½	24½×19½×8½
Elements	750 W	1·5 kW	750 to 3,000 W immersion	1 kW asbestos mat	2 kW asbestos mat	2 kW asbestos mat	1 kW asbestos mat	1½ kW	2 kW
Method of control	2-heat	2-heat	Single or 3-heat switch, d.c. or a.c.	None	Switch or thermostat	Switch	None	Half-heat	Thermostatic
Casing	Metal	Metal	Cast iron	Steel	Steel	Steel	Steel	Pressed steel	Steel
Finish	Ripple bronze	Ripple bronze	Sprayed aluminium or bronze paint	Various	Various	Bronze or cream	Cream or eau-de-nil	Beige	Black crackle with flame gold louvres
Price (excl. tax)	£3 11 0	£4 2 6	£13 0 0 to £26 5 0	£3 15 0	Switch: £6 17 0 T'stat.: £8 12 0	£8 0 0	£2 5 0	£9 15 0	£11 0 0
Purchase tax	£1 19 1	£2 5 5	£7 3 0 to £14 8 9	£2 1 3	Switch: £3 15 5 T'stat.: £4 14 8	£4 8 0	£1 4 9	£5 6 11	£6 1 0

Manufacturer:	E. K. Cole ("Thermovent")							de Renzi, Holmes ("Deren")	
Name or model	1	2	3	4	5	6	7	1	2
Type	Portable	Portable	Portable	Portable	Portable	Portable	Portable	Portable	Portable
Size (height, width & depth in inches)	22×18×6	30×22×6	30×22×6	22×18×6	30×22×6	30×22×6	22×18×6	22×18×6	30×22×6
Elements	1 kW	2 kW	3 kW	1 kW	2 kW	3 kW	1 kW	1 kW	2 kW
Method of control	—	Step	Step	—	Step	Step	—	—	Step
Casing	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Finish	Bronze or silver green stove enamel	Bronze stove enamel	Bronze stove enamel	Bronze or silver green stove enamel	Bronze stove enamel	Bronze stove enamel	Bronze or silver green stove enamel	Bronze or silver green stove enamel	Bronze stove enamel
Price (excl. tax)	£6 10 0	£10 7 6	£10 17 6	£6 10 0	£10 7 6	£10 17 6	£6 10 0	£6 10 0	£10 7 6
Purchase tax	£3 11 6	£5 14 1	£5 19 7	£3 11 6	£5 14 1	£5 19 7	£3 11 6	£3 11 6	£5 14 1

Manufacturer:	E. K. Cole ("Thermovent")							de Renzi, Holmes ("Deren")	
Name or model	FR1 & FRC1	FR2 & FRC2	SR1 & SRC1	SR2 & SRC2	SR3 & SRC3	B2 & BC2	B1 & BC1	—	—
Type	Portable	Portable	Portable	Portable	Portable	Inset wall mounting	Inset wall mounting	Portable	Portable
Size (height, width & depth in inches)	23×16½×9½	23×25½×9½	23×15½×8¾	23×24½×8¾	23×24½×8¾	22½×23½×1¾	22½×14½×1⅜	20×14×5½	27×18×6⅜
Elements	1 kW	2 kW (2-heat switch)	1 kW	2 kW (2-heat switch)	3 kW	2 kW	1 kW	1 kW mica	2 kW mica
Method of control	FR1: Step FRC1: Infinitely variable	FR2: Step FRC2: Infinitely variable	SR1: Step SRC1: Infinitely variable	SR2: Step SRC2: Infinitely variable	SR3: Step SRC3: Infinitely variable	B2: Step BC2: Infinitely variable	B1: Step BC1: Infinitely variable	Thermostatic or switch	Thermostatic or switch
Casing	Plastic	Plastic	Steel	Steel	Steel	Plastic panels with steel grille	Plastic panels with steel grille	Steel	Steel
Finish	Polished walnut	Polished walnut	Bronze stoved enamel	Bronze stoved enamel	Bronze stoved enamel	—	—	Stove enamel	Stove enamel
Price (excl. tax)	FR1: £7 0 0 FRC1: £8 5 0	FR2: £10 10 0 FRC2: £11 10 0	SR1: £6 10 0 SRC1: £7 10 0	SR2: £9 10 0 SRC2: £10 10 0	SR3: £10 10 0 SRC3: £11 10 0	B2: £10 15 0 BC2: £12 0 0	B1: £7 10 0 BC1: £8 15 0	Switch: £6 2 0 T'stat: £7 9 6	Switch: £9 7 6 T'stat: £10 15 0
Purchase tax	FR1: £3 16 10 FRC1: £4 10 6	FR2: £5 15 3 FRC2: £6 6 2	SR1: £3 11 4 SRC1: £4 2 4	SR2: £5 4 3 SRC2: £5 15 3	SR3: £5 15 3 SRC3: £6 6 2	B2: £5 17 11 BC2: £6 11 8	B1: £4 2 4 BC1: £4 16 0	£3 6 11	£5 2 10

Manufacturer:	"Deren"	Dexray	Dimplex		Electroway				G.E.C.
Name or model	—	C.V.12	—	—	C2	C21	C3	C31	D2800A
Type	Portable	Portable	Oil filled, panel	Oil filled, column	Portable	Portable	Portable	Portable	Portable
Size (height, width & depth in inches)	27×25×6¾	28×16×8	26×20½×3½ to 70×26½×3½ (with feet, height and depth 2in more)	30×21×3½ to 39½×21×3½ (with feet, height and depth 2in more)	21×30×6	21×30×6	21×30×6	21×30×6	26½×16¼×8½
Elements	3 kW mica	2 kW ironclad mica	½, ¾, 1, 1½, 1½ and 2 kW	1½ and 2 kW	Two 1 kW enclosed	Two 1 kW enclosed	Two 2 kW enclosed	Two 1 kW enclosed	One 1,500 W rod
Method of control	Thermostatic or switch	Step	Thermostat and cut-out	Thermostat and cut-out	Step	Step	Step	Step	Step
Casing	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Sheet metal
Finish	Stove enamel	Cream or black or brown	Standard, light bronze. Other finishes available at no extra charge		Various stove enamel	Various stove enamel	Various stove enamel	Various stove enamel	Bronze
Price (excl. tax)	Switch: £13 13 0 T'stat: £15 0 6	£10 0 0	£9 5 0 to £22 0 0	£19 10 0 to £24 10 0	£8 8 0	£9 0 0	£9 9 0	£9 18 0	£8 5 0
Purchase tax	£7 9 9	£5 12 6	£5 1 6 to £12 1 3	£10 14 0 to £13 8 9	£4 12 5	£4 19 0	£5 3 11	£5 8 11	£4 10 9

CONVECTION HEATERS . . . . . *continued*

Manufacturer:	Gillott	Heatrae				C. Hounslow & Co. ("Chalex")			
Name or model	"Glo-warm"	321	323	2410	2430	No. 2 Standard	No. 7 Panel inset	No. 13 Panel offset	No. 12 Dual purpose
Type	Portable	Floor	Floor	Wall	Wall	Portable	Wall mounting	Wall mounting	Wall mounting
Size (height, width & depth in inches)	23×7×7	34⅛×18½×6½	34⅛×29×6½	30½×14×5	30½×38×5	27×16×9½	19½×20½×1½	19½×20½×4½	23½×17×5½
Elements	1 kW open coil black heat	1 kW enclosed	3 kW enclosed	1 kW enclosed	3 kW enclosed	2 kW black heat	2 kW black heat	2 kW black heat	1 kW black heat & 1 kW radiant
Method of control	Provision for thermostat	Step	Step	Step	Step	Switch to operate 1 kW or 2 kW	Thermostatic	Thermostatic	Two switches
Casing	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel
Finish	Stove enamel	Stove enamel	Stove enamel	Stove enamel	Stove enamel	Hammered beige	Figured walnut	Figured walnut	Bronze
Price (excl. tax)	£3 0 0 T'stat 15s 3d	£8 10 0	£16 17 0	£8 0 0	£15 18 0	£8 2 6	£11 17 6	£11 17 6	£7 17 6
Purchase tax	£1 12 11 T'stat 8s 4d	£4 13 3	£9 4 10	£4 7 9	£8 14 5	£4 9 7	£6 10 11	£6 10 11	£4 6 10

Manufacturer:	Hume, Atkins & Co. ("Raylux")			Hurseal			M. & J. Lossos		Midland Elec. Mfg.
Name or model	—	E.4599	—	F	TV	A	"Kaloric-Mayfair"	"Kaloric-Standard"	M.E.M.
Type	Portable floor	Portable floor with incorporated radiant element	Recessed or surface with or without radiant element	Floor, oil filled	Portable panel, oil filled	Panel or wall	Cabinet	Cabinet	Portable
Size (height, width & depth in inches)	20×14×5 to 26½×20×7	24×7¼×7½	Various	21×11½×5½ to 28×31½×5½	24×26½×¾ & 24×51½×¾	18×35⅝×1⅝ to 30×82⅝×1⅝	19⅞×12½×6½ to 25½×22×7	19⅞×12½×6½ to 25½×22×7	24×22×6½
Elements	1, 2 or 3 kW mica wound	2 kW mica wound	As required	½–2 kW "Torribar" sheathed wire	½ or 1 kW "Torribar" sheathed wire	½–2 kW "Torribar" sheathed wire	750 W, 1 kW, 2 kW or 3 kW black heat	750 W, 1 kW, 2 kW or 3 kW black heat	1 kW coiled spiral
Method of control	Switch or thermostat	Switch or thermostat	Switch or thermostat	—	—	—	Switch or thermostat	Switch or thermostat	Thermostat if required
Casing	Sheet steel	Sheet steel	Sheet steel	Pressed steel	Pressed steel	Pressed steel	Sheet steel	Sheet steel	Steel
Finish	Black, brown, pale green or cream crackle	Black, brown, pale green or cream crackle	As required	Cream or bronze	Cream or bronze	Priming coat only	Bronze cellulose sprayed or cream stove enamel	Bronze cellulose sprayed or cream stove enamel	Bronze
Price (excl. tax)	£4 10 0 to £11 6 8	£11 2 4	—	£11 19 6 to £21 19 6	½ kW: £8 19 6 1 kW: £13 19 6	£9 19 6 to £18 19 6	£6 6 0 to £13 11 4 T'stat £1	£5 19 8 to £13 11 4 T'stat £1	£7 12 0 (with thermostat £9 0 0)
Purchase tax	£2 10 8 to £6 7 6	£6 5 1	—	£7 0 1 to £12 17 1	½ kW: £4 18 5 1 kW: £7 13 3	£5 16 7 to £11 1 11	£3 9 2 to £7 8 10 T'stat 11s 0d	£3 5 8 to £7 8 10 T'stat 11s 0d	£4 3 7 (with thermostat £4 19 0)

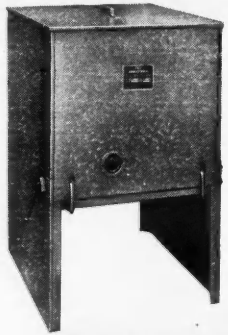
Manufacturer:	Midland Elec. Mfg.	H. G. Poxon			Santon				
Model	M.E.M.	PR2	PR3	PR5	Fluid filled radiators				
Type	Portable	Portable	Portable	Portable	Portable				

	£11 0 8			£21 19 6	1 kW: £13 19 6	£18 19 6	£13 11 4 T'stat £1	£13 11 4 T'stat £1	(with thermostat £9 0 0)
Purchase tax	£2 10 8 to £6 7 6	£6 5 1	—	£7 0 1 to £12 17 1	½kW: £4 18 5 1 kW: £7 13 3	£5 16 7 to £11 1 11	£3 9 2 to £7 8 10 T'stat 11s 0d	£3 5 8 to £7 8 10 T'stat 11s 0d	£4 3 7 (with thermostat £4 19 0)

Manufacturer:	**Midland Elec. Mfg.**	**H. G. Poxon**			**Santon**				
Model	M.E.M.	PR2	PR3	PR5	Fluid filled radiators				
Type	Portable	Portable	Portable	Portable	Portable	Portable	Portable		
Size (height, width & depth in inches)	24×22×6½	20×22×10	20×22×12	20×22×15	24⅜×18×6	24⅜×28×6	24⅜×36×6		
Elements	1½kW coiled spiral	½kWembd. panel	1kWembd. panel	1½kWembd. panel	1½ kW	1½ kW	2 kW		
Method of control	Step or t'stat	Room thermostat supplied as accessory if required			Thermostat	Thermostat	Thermostat		
Casing	Steel	No casing, plastic panels			Steel	Steel	Steel		
Finish	Bronze	Enamel	Enamel	Enamel	Cream or light brown	Cream or light brown	Cream or light brown		
Price (excl. tax)	£9 0 0 (with thermostat £10 0 0)	£5 15 0	£7 10 0	£11 4 0	£15 0 0	£21 0 0	£25 5 0		
Purchase tax	£4 19 0 (with t'stat £5 10 0)	£3 3 3	£4 2 6	£6 3 3	£8 5 0	£11 11 0	£13 17 9		

REFRIGERATORS

Manufacturer:	**Astral**	**A. J. Balcombe**			**Electrolux**				
Model	BK/D	Crosley Shelvador AMB7	Crosley Shelvador SMC9	Crosley Shelvador CAC11	L.150 table top	L.H.150 table top with utility drawer	L.300	L.450	L.700
Type	Absorption	Compressor	Compressor	Compressor	Absorption	Absorption	Absorption	Absorption	Absorption
Size (height, width & depth in inches)	24½×21½×22¾	55×25×26	58×31×28	61×31×28	35½×20⅜×21⅛	36×21½×21⅝	45⅜×23⅜×24⅛	53 5/16×26 5/16×26⅞	60×31×27¾
Capacity	1·5 cu ft	7 cu ft	9·5 cu ft	10·5 cu ft	1·5 cu ft	1·5 cu ft	3 cu ft	4·6 cu ft	7 cu ft
Shelf area	3·6 sq ft	Adjustable	Adjustable	Adjustable	3·5 sq ft	3·5 sq ft	5·8 sq ft	8·4 sq ft	12·5 sq ft
Ice capacity	2 trays,20 cubes	2 ice trays	2 ice trays	3 ice trays	8 cubes	8 cubes	32 cubes (2 lb)	64 cubes (4 lb)	80 cubes
Salad crisper	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Frozen food chest	No	Yes (22 lb)	Yes (50 lb)	Yes (50 lb)	No	No	No	No	Yes
Interior light	No	Yes	Yes	Yes	No	No	No	No	No
Motor	—	1/10 h.p.	1/10 h.p.	1/10 h.p.	—	—	—	—	—
Element loading	95 W	—	—	—	140 W	140 W	200 W	275 W	350 W
Finish	White synthetic	"Dulux"	"Dulux"	"Dulux"	White enamel	White enamel	White enamel	White enamel	White enamel
Price (excl. tax)	£28 14 1	£105 0 0	£135 0 0	£175 0 0	£39 17 6	£42 0 0	£59 15 0	£79 0 0	£104 0 0
Purchase tax	£11 3 11	£40 19 0	£52 13 0	£68 5 0	£15 1 4	£15 17 4	£22 11 5	£29 16 11	£39 5 10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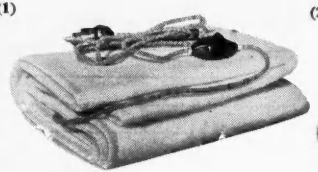
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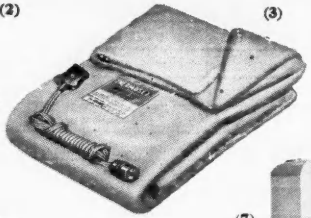
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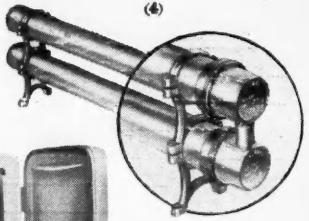
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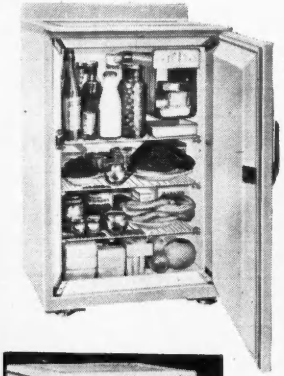
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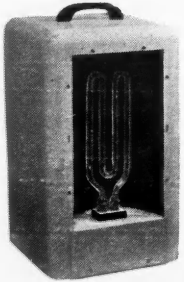
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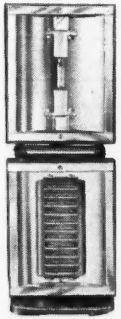
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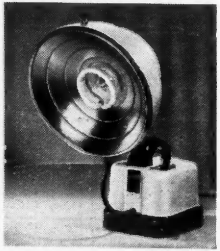
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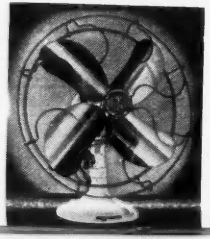
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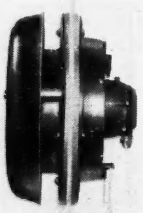
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(1) G.E.C. soil sterilizer. (2) The " Yelsen " de luxe blankets range in price from £4, plus 14s 6d P.T., to £13, plus £2 7s. **(3)** Thermoset blankets cost from £6 16s 7d (plus £1 1s 7d P.T.) to £16 18s 5d (plus £2 13s 5d P.T.). Variable heat is £1 19s 6d extra. **(4)** Early Crops greenhouse tubular heaters are available in lengths from 2 to 12ft, single or multiple banks. **(5)** Kelvinator " FT4 " 4 cu ft refrigerator. **(6)** The Lumsden

(11)

(12)

(13)

(14)

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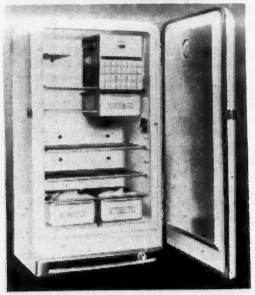

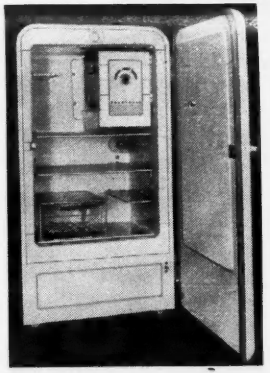

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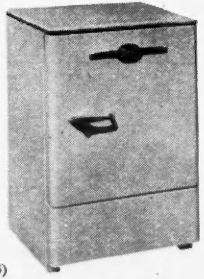

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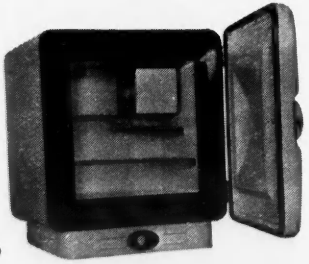

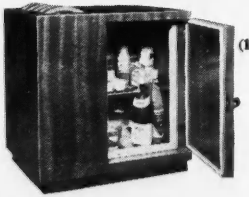

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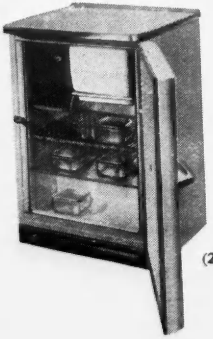

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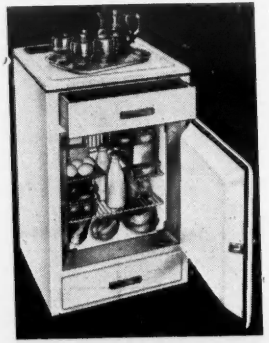


(23)

REFRIGERATORS . . . . . *continued*

Manufacturer:	English Electric	Frigidaire				General Electric Co., Ltd.			
Model	76A	OOR-42	TOR-42 (table-top)	OMM-74	OMM-92	DE30 (T/T)	DE51	DE70	DE71
Type	Compressor	Compressor	Compressor	Compressor	Compressor	Compressor	Compressor	Compressor	Compressor
Size (height, width & depth in inches)	57 $\frac{9}{16}$ × 28 $\frac{3}{4}$ × 26 $\frac{3}{8}$	35 × 24 $\frac{5}{16}$ × 26 $\frac{1}{2}$	35 $\frac{3}{4}$ × 24 $\frac{5}{16}$ × 26 $\frac{1}{2}$ (plus 4 $\frac{3}{4}$ in high splash back)	54 $\frac{1}{2}$ × 27 × 28 $\frac{5}{8}$	57 $\frac{5}{8}$ × 31 $\frac{7}{8}$ × 28 $\frac{5}{8}$	36 × 23 × 21 $\frac{7}{8}$	53 $\frac{11}{16}$ × 27 $\frac{1}{2}$ × 23 $\frac{11}{16}$	55 $\frac{11}{16}$ × 27 $\frac{1}{2}$ × 24 $\frac{1}{2}$	55 $\frac{11}{16}$ × 27 $\frac{1}{2}$ × 24 $\frac{1}{2}$
Capacity	7·6 cu ft	4·25 cu ft	4·25 cu ft	7·3 cu ft	9·1 cu ft	3·1 cu ft	5·3 cu ft	7·3 cu ft	6·8 cu ft
Shelf area	14·6 sq ft	7·46 sq ft	7·46 sq ft	11·4 sq ft	17·3 sq ft	6 sq ft	10·4 sq ft	12·5 sq ft	13·4 sq ft
Ice capacity	40 cubes	1 $\frac{1}{2}$ lb, 14 cubes	1 $\frac{1}{2}$ lb, 14 cubes	3 lb, 28 cubes	3 lb, 28 cubes	1·4 lb	2 lb	2 $\frac{1}{2}$ lb	5 $\frac{1}{2}$ lb
Salad crisper	Yes (evaporator 0·59 cu ft)	No	No	Yes	Yes	—	Yes	Yes	Two
Frozen food chest	—	Yes	Yes	Yes	Yes	Freezers have large compartment for accommodation of packets of frozen food in addition to ice making			Freezing compartment full width of cabinet
Interior light	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes
Motor	$\frac{1}{6}$ h.p.	$\frac{1}{6}$ h.p.	$\frac{1}{6}$ h.p.	$\frac{1}{6}$ h.p.	$\frac{1}{6}$ h.p.	$\frac{1}{6}$ h.p.	$\frac{1}{6}$ h.p.	$\frac{1}{6}$ h.p.	$\frac{1}{6}$ h.p.
Element loading	—	—	—	—	—	—	—	—	—
Finish	Cream or white	Synthetic enamel, vitreous interior	Synthetic enamel, vitreous interior and table top	Synthetic enamel, vitreous interior	Synthetic enamel, vitreous interior	White	White	White	White
Price (excl. tax)	£93 12 6	£65 2 0	£55 19 5	£95 5 4	£124 2 4	£45 0 0	£81 0 0	£87 10 0	£94 0 0
Purchase tax	£35 7 6	£23 13 0	£23 19 7	£34 9 8	£45 7 8	£17 0 0	£30 12 1	£33 1 2	£35 10 3

Manufacturer:	H.M.V.	Hotpoint	Insulations & Constructions	International Refrigerator Co. ("Coldrator")			Kelvinator		
Model	R66.51	H30, Table top	Shelf or sideboard	CD.3, table top	CT.45, table top	CS.70	NHC-7E	NSC-7E	FT4 table top
Type	Compressor	Compressor	Absorption	Compressor	Compressor	Compressor	Compressor	Compressor	Compressor
Size (height, width & depth in inches)	54 $\frac{5}{8}$ × 23 $\frac{7}{8}$ × 26	36 × 24 $\frac{1}{4}$ × 25 $\frac{1}{2}$	23 $\frac{3}{4}$ × 23 × 16 $\frac{1}{2}$	36 × 21 × 21 $\frac{7}{16}$	36 $\frac{1}{2}$ × 24 $\frac{1}{2}$ × 24	53 $\frac{1}{2}$ × 27 $\frac{1}{4}$ × 24 $\frac{1}{2}$	53 $\frac{1}{2}$ × 24 $\frac{1}{2}$ × 27 $\frac{47}{64}$	53 $\frac{1}{2}$ × 24 $\frac{1}{2}$ × 27 $\frac{47}{64}$	36 × 24 $\frac{7}{16}$ × 23 $\frac{3}{16}$
Capacity	6·52 cu ft	4·5 cu ft	1·75 cu ft	3 cu ft	4·5 cu ft	7·1 cu ft	6·92 cu ft	7·41 cu ft	4 cu ft
Shelf area	11·43 sq ft	8·8 sq ft	2 sq ft	6 sq ft	8·8 sq ft	13 sq ft	13·52 sq ft	13·02 sq ft	6·7 sq ft
Ice capacity	3·4 lb	40 cubes	8 oz	18 cubes (1 $\frac{1}{2}$ lb)	36 cubes (3 lb)	36 cubes (3 lb)	Ample	Ample	1 $\frac{1}{2}$ lb
Salad crisper	Yes	Yes	No	No	No	Yes	Yes	No	No

Capacity	6·52 cu ft	4·5 cu ft	1·75 cu ft	3 cu ft	4·5 cu ft	7·1 cu ft	6·92 cu ft	7·41 cu ft	4 cu ft
Shelf area	11·43 sq ft	8·8 sq ft	2 sq ft	6 sq ft	8·8 sq ft	13 sq ft	13·52 sq ft	13·02 sq ft	6·7 sq ft
Ice capacity	3·4 lb	40 cubes	8 oz	18 cubes (1¼ lb)	36 cubes (3 lb)	36 cubes (3 lb)	Ample	Ample	1¼ lb

Salad crisper	Yes	Yes	No	No	No	Yes	Yes	No	No
Frozen food chest	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No
Interior light	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Motor	$\frac{1}{12}$ h.p.	—	—	$\frac{1}{12}$ h.p.	$\frac{1}{12}$ h.p.	$\frac{1}{12}$ h.p.	$\frac{1}{8}$ h.p.	$\frac{1}{8}$ h.p.	$\frac{1}{8}$ h.p.
Element loading	—	—	95 W	—	—	—	—	—	—
Finish	White synthetic enamel, titanium porcelain interior	Cream	Oak, walnut, mahogany, white	Stove enamel exterior, porcelain enamel interior	Baked synthetic enamel exterior, porcelain enamel interior	Stove enamel exterior, porcelain enamel interior	White	White	White
Price (excl. tax)	£111 16 0 Guarantee and installation £7 10 0	£71 0 0	£28 10 0	£50 0 0	£69 10 0	£92 10 0	£97 7 9	£85 12 11	£64 1 6
Purchase tax	£43 12 0	£25 10 1	£11 8 0	£18 2 8	£24 18 9	£33 12 6	£35 5 8	£30 16 11	£23 1 6

Manufacturer:	**Kelvinator**	**Lightfoot**			**Longford Engineering ("L.E.C.")**			**Prestcold**	
Model	FT4, less table top	5LDR	7LDR	7FLDR	P35	P6	P9	S312, table top	L51
Type	Compressor	Compressor	Compressor	Compressor	Compressor	Compressor	Compressor	Compressor	Compressor
Size (height, width & depth in inches)	$36\times24\frac{7}{16}\times23\frac{7}{16}$	$53\frac{3}{4}\times27\frac{1}{2}\times24$	$55\frac{11}{16}\times27\frac{1}{2}\times24\frac{1}{2}$	$55\frac{11}{16}\times27\frac{1}{2}\times24\frac{1}{2}$	$40\frac{1}{2}\times22\frac{1}{2}\times17\frac{1}{2}$	$48\frac{7}{8}\times26\frac{1}{2}\times22\frac{7}{16}$	$60\frac{1}{2}\times29\frac{1}{2}\times23$	$36\times21\frac{5}{8}\times23\frac{3}{4}$	$47\frac{1}{2}\times25\frac{5}{8}\times25\frac{1}{2}$
Capacity	4 cu ft	5 cu ft	7·6 cu ft	7·6 cu ft	3 cu ft	6 cu ft	9 cu ft	3 cu ft	5·1 cu ft
Shelf area	6·7 sq ft	9·4 sq ft	12·5 sq ft	12·5 sq ft	4·8 sq ft	10·1 sq ft	15·5 sq ft	6 sq ft	9·9 sq ft
Ice capacity	1½ lb	36 cubes or more	2¾ lb	5½ lb	6 cubes	24 cubes	24 cubes	1½ lb	2¾ lb
Salad crisper	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes
Frozen food chest	No	Yes	Yes	Full-width	No	Yes	Yes	No	Yes
Interior light	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
Motor	⅛ h.p.	⅛ h.p.	⅛ h.p.	⅛ h.p.	⅛ h.p.	⅛ h.p.	⅛ h.p.	⅛ h.p.	⅛ h.p.
Element loading	—	—	—	—	—	—	—	—	—
Finish	White	White vitreous enamel	White vitreous enamel	White vitreous enamel	Stove enamel	Stove enamel	Stove enamel	High bake synthetic enamel with vitreous enamel liner	
Price (excl. tax)	£62 11 0	£85 0 6	£92 0 0	£98 10 0	£41 5 0	£80 0 0	£93 10 0	£47 0 0	£73 0 0
Purchase tax	£22 10 0	£30 12 1	£33 1 2	£35 10 3	£16 1 9	£31 4 0	£37 12 8	£17 0 0	£26 8 11

REFRIGERATORS . . . . . *continued*

WASHING MACHINES

Manufacturer:	Prestcold (*con.*)	Wilkins & Mitchell ("Servis")		Manufacturer:	Ajax ("Ada")			Bendix	British Vacuum Cleaner ("Goblin")
Model	L71	JSR76	MSR33 table top	Model	Mark I	Mark II	Mark III ("Coronation")	Automatic Home Washer	W.115X
Type	Compressor	Compressor	Compressor	Type	Cabinet	Cabinet	Cabinet	Cabinet	Cabinet
Size (height, width & depth in inches)	51¼ × 28 1/16 × 26⅛	55 11/16 × 27½ × 24½	36 × 23 × 21⅞	Size (height, width & depth or height & diam in inches)	34 × 22 × 22	30 × 22 × 22	28½ × 18 × 18	36½ × 25½ × 22½	32½ × 22⅜ × 20⅝
Capacity	7·1 cu ft	7·6 cu ft	3·2 cu ft	Tub capacity (dry clothes)	8½ lb	8½ lb	4½ lb	9 lb	5 lb
Shelf area	11·8 sq ft	13·4 sq ft	6 sq ft	If heated, loading of element	3 kW	3 kW	3 kW	—	—
Ice capacity	3 lb	5½ lb	1½ lb	Method of operation	3 blade agitator	3 blade agitator	3 blade agitator	Tumble action	Oscillating
Salad crisper	Yes	Yes	Yes	Type of wringer or spin dryer)	Power	Power	Power	High-speed spin dryer	Hand (14in)
Frozen food chest	Yes	Yes	Yes						
Interior light	Yes	Yes	No						
Motor	⅛ h.p.	⅛ h.p.	⅛ h.p.	Exterior finish	Stove enamel	Stove enamel	Stove enamel	Vitreous enamel	Stove enamel
Element loading	—	—	—						
Finish	As for S312	Stove enamelled	Stove enamelled	Tub finish	Aluminium	Aluminium	Aluminium	Vitreous enamel	Vitreous enamel
Price (excl. tax)	£87 10 0	£98 10 0	£49 0 0	Price (excl. tax)	£48 10 0 (excluding heater)	£46 0 0 (excluding heater)	£35 0 0 (excluding heater)	£75 0 0	£34 17 10
Purchase tax	£31 14 9	£36 8 6	£18 19 9	Purchase tax	£18 18 4	£17 18 9	£13 13 0	£28 6 9	£10 13 6

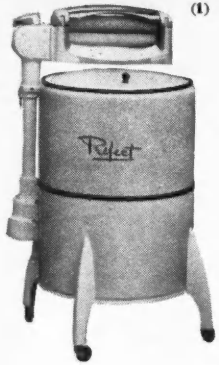
Manufacturer:	British Vacuum Cleaner	Burco		Carefree	Clegg & Coupe ("Prefect")		Cotto Products	English Electric	
Model	W.114	10P	10P Heated	Carefree	Standard	"H" Type	C600	4002	4003
Type	Cabinet	Cabinet	Cabinet	Sink	Round	Round	Cabinet	Cabinet	Cabinet
Size (height, width & depth or height & diam in inches)	30⅛ × 17⅜ × 17⅜	35¾ × 22 × 22	35¾ × 22 × 22	—	39 × 18	39 × 18	43 × 24½ × 26	45½ × 23½ × 26½ with wringer	45½ × 23½ × 26½ with wringer
Tub capacity (dry clothes)	4 lb	9 lb	9 lb	2½ lb	5–6 lb	5–6 lb	8 lb	8–9 lb	8–9 lb
If heated, loading of element	—	—	2 kW	—	—	2½ kW	—	—	3 kW

Method of operation	Oscillating	Gyro	Gyro	By impellor creating circula-	4 bladed agitator	4 bladed agitator	Reciprocating	Central 3 fin agitator	Central 4 fin agitator

If heated, loading of element	—	—	2 kW	—	—	2½ kW	—	—	3 kW

Method of operation	Oscillating	Gyro	Gyro	By impellor creating circulation of water through suction and expulsion action	4 bladed agitator	4 bladed agitator	Reciprocating	Central 3 fin agitator	Central 4 fin agitator
Type of wringer (or spin dryer)	Hand (14in)	Power	Power	—	Power	Power	Power	8 position 12in power wringer	8 position 12in power wringer
Exterior finish	White stove enamel	White or cream enamel	White or cream enamel	Maroon Bakelite body, stainless steel skirt	Stoved white or cream	Stoved white or cream	Stove enamel	Cream or white	Cream or white
Tub finish	Vitreous enamel	Mottled grey vitreous enamel	Mottled grey vitreous enamel	—	Grey anodized	Grey anodized	Silver anodized	Blue dapple vitreous enamel	Blue dapple vitreous enamel
Price (excl. tax)	£26 5 0	£58 10 0	£63 0 0	£12 6 0	£33 17 0	£49 2 0	£52 17 0	£50 0 0	£59 10 0
Purchase tax	£7 13 3	£22 16 4	£24 11 5	£4 19 0	£13 4 6	£19 3 0	£20 7 0	£19 10 0	£23 4 2

Manufacturer:	H. Fisher (Oldham)			G.E.C.	Hoover		Hotpoint		Longford
Model	"L"	De-Luxe "E.R." (pump)	De-Luxe "E.R." (pump & heater)	DE200	Mk. 1	Mk. 2	CF with gravity drain	CF/P with centrifugal pump	"Longford"
Type	Cabinet	Cabinet	Cabinet	Cabinet	Cabinet	Cabinet	Cabinet	Cabinet	Cabinet
Size (height, width & depth or height & diam in inches)	30×30×21	32×23×23	32×23×23	36×22½×22½	30¾×16¾×15¾	30½×17½×16½	34×22×22	34×22×22	32×22½×20¼
Tub capacity (dry clothes)	7 lb	9 lb	9 lb	8 lb	3½ lb	6 lb	7 lb	7 lb	6–7 lb
If heated, loading of element	—	—	2 or 3 kW	—	—	—	—	—	—
Method of operation	Perpendicular agitator	Perpendicular agitator	Perpendicular agitator	Agitator	Pulsator	Pulsator	Gyrator	Gyrator	4-blade impellor
Type of wringer (or spin dryer)	Power	Power	Power	Power	Hand	Hand	Power	Power	Hand or power (14in)
Exterior finish	Stove enamel	Stove enamel	Stove enamel	White stove enamel	White enamel	White enamel	Cream or white	Cream or white	White stove enamel
Tub finish	Vitreous enamel	Vitreous enamel	Vitreous enamel	Dark mottled porcelain enamel	Anodized aluminium	Anodized aluminium	Aluminium	Aluminium	Aluminium
Price (excl. tax)	£39 18 0	£51 19 6	£55 2 6	£58 10 0	£27 0 0	£35 0 0	£56 10 0	£58 10 0	Hd. wringer: £28 Pr. wringer: £40
Purchase tax	£14 19 3	£19 9 10	£20 13 5	£22 16 4	£8 2 0	£11 2 0	£22 0 9	£22 16 4	Hand wringer. £8 15 8 Power wringer: £15 8 0



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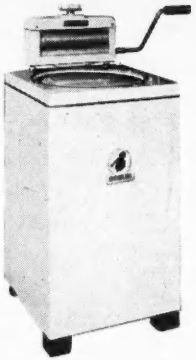
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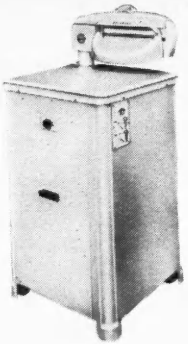
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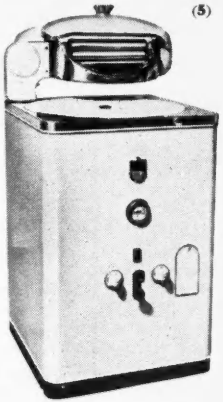
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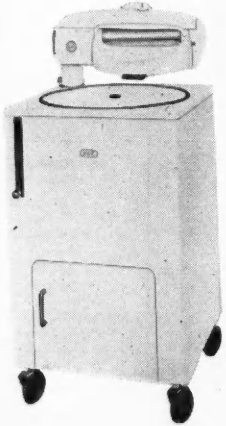
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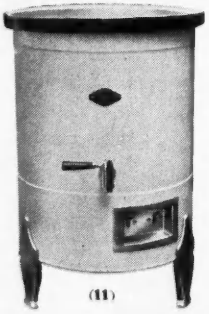
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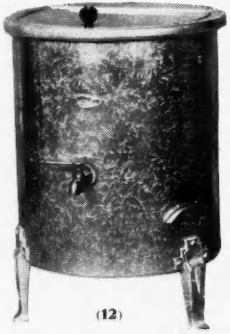
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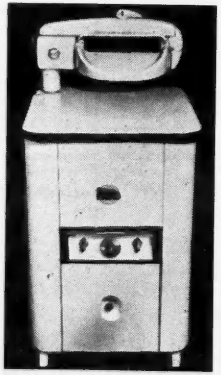
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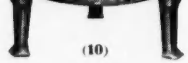

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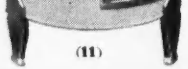

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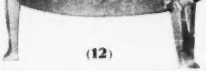

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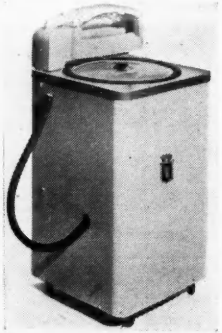

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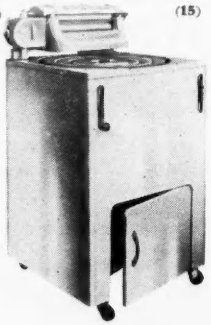

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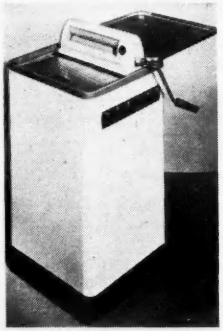

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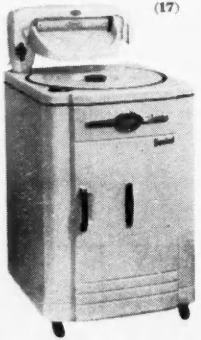

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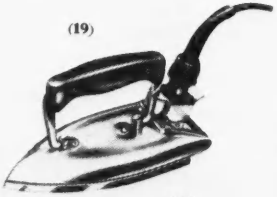

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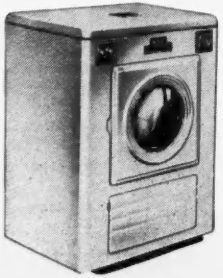

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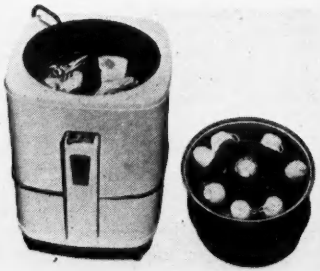

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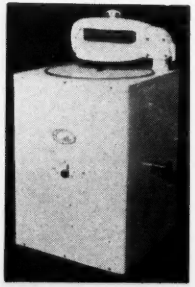

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(1) Clegg & Coupe "Prefect" washer. **(2)** British Vacuum Cleaner & Engg. Co.'s "Goblin" W.114 washer. **(3)** Longford Electric washer with power wringer. **(4)** Burco "10P" washing machine. **(5)** English Electric 4003 model. **(6)** Hotpoint "Plus Five" lightweight iron (£3 15s). **(7)** Grafton heat controlled iron (a.c. model 37s 6d, a.c./d.c. 42s 6d). **(8)** The Bylock "Victor" safety iron (£3 2s 6d) automatically lifts from the work when the hand is removed. **(9)** G.E.C. washing machine. **(10)** Burco "375" wash boiler. **(11)** South Wales Switchgear wash boiler. **(12)** Universal Boilers "Epic" wash boiler. **(13)** Universal Boilers "Swirlux" type 504 washer. **(14)** "Coronation" Mark III washer (Ajax Domestic Appliances, Ltd.). **(15)** Hotpoint washing machine. **(16)** Hoover Mark II washing machine. **(17)** Wilkins & Mitchell "Servis" MHP machine with water heating facilities. **(18)** Parnall (Yate) EW50H washer showing heating control and method of stowing wringer. **(19)** G.E.C. universal voltage travelling iron (£2 15s). **(20)** Bulpitt "Swan Brand" wash boiler. **(21)** Bendix automatic home washer. **(22)** Thor model 244 "Automagic" spin-dry washing machine with dishwashing attachment. **(23)** Cotto C.600 cabinet washer. **(24)** Marlow & Wildman "Wavemaster" washing machine. **(25)** The Carefree machine circulates the water by means of a suction and expulsion action

WASHING MACHINES . . . . . *continued*

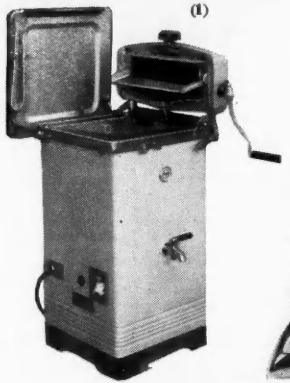
Manufacturer:	Marlow & Wildman	Parnall (Yate)		Thor			Universal Boilers ("Swirlux")		
Model	"Wavemaster"	EW.50	EW.50H	Model 244	Model 492	"Stowaway"	500	500H	503
Type	Round portable	Cabinet	Cabinet	Cabinet	Round	Cabinet (with retractable legs)	Cabinet	Cabinet	Cabinet
Size (height, width & depth or height & diam in inches)	20½×14	36×20⅜×20⅜	36×20⅜×20⅜	36×25×25	36×22	36×21×21 (legs retracted: 25in high)	30×18×18	30×18×18	47×23×23
Tub capacity (dry clothes)	3½ lb	5½ lb	5½ lb	8 lb	8 lb	5½ lb	6 lb	6 lb	10–11 lb
If heated, loading of element	—	—	2 kW	—	—	—	—	2 kW	—
Method of operation	Collapsing vacuum	Reciprocating agitator	Reciprocating agitator	Agitator	Agitator	Agitator	Gyrator	Gyrator	Gyrator
Type of wringer (or spin dryer)	—	Power	Power	Spin dryer	Power	Power	Hand	Hand	Power
Exterior finish	Anodized aluminium	White or cream enamel	White or cream enamel	White or cream vitreous enamel	White vitreous enamel	White vitreous enamel	White stove enamel	White stove enamel	Cream stove enamel
Tub finish	Anodized aluminium	Mottled grey vitreous enamel	Mottled grey vitreous enamel	Speckled vitreous	White vitreous	Speckled vitreous	Tinned copper	Tinned copper	Vitreous enamel
Price (excl. tax)	£18 7 0	A.c.: £45 10 0 D.c.: £50 3 4	A.c.: £52 10 0 D.c.: £57 5 0	£72 0 0 (Dishwasher attachment: £21)	£52 9 0	£55 0 0	£33 8 4	£36 9 8	£48 15 0
Purchase tax	£6 12 10	A.c.: £17 1 3 D.c.: £18 16 3	A.c.: £19 13 9 D.c.: £21 9 4	£26 5 0 (Dishwasher attachment: £3 18 9	£20 0 0	£20 12 6	£10 17 0	£11 19 5	£19 0 3

Manufacturer:	"Swirlux" (*con.*)	Wilkins & Mitchell ("Servis")			
Model	504	RS	RH	MPS	MHP
Type	Cabinet with automatic timing device	Round	Round	Cabinet	Cabinet
Size (height, width & depth or height & diam in inches)	47×23×23	44×22	44×22	44×22½×23¾	44×22½×23¾
Tub capacity (dry clothes)	10–11 lb	9 lb	9 lb	9 lb	9 lb
If heated, loading of element	—	—	3 kW	—	3 kW
Method of operation	Gyrator	Semi-rotary four bladed	Semi-rotary four bladed	Semi-rotary four bladed	Semi-rotary four bladed

Tub capacity (dry clothes)	10–11 lb	9 lb	9 lb	9 lb	9 lb	
If heated, loading of element	—	—	3 kW	—	3 kW	
Method of operation	Gyrator	Semi-rotary four bladed	Semi-rotary four bladed	Semi-rotary four bladed	Semi-rotary four bladed	
Type of wringer (or spin dryer)	Power	Power	Power	Power	Power	
Exterior finish	Cream stove enamel	Stove enamel	Stove enamel	Stove enamel	Stove enamel	
Tub finish	Vitreous enamel	Aluminium	Aluminium	Aluminium	Aluminium	
Price (excl. tax)	£65 15 0	£47 0 0	£54 10 0	£58 0 0	£65 10 0	
Purchase tax	£25 12 10	£18 16 0	£21 16 0	£23 4 0	£26 4 0	

WASH BOILERS

Manufacturer:	Amplec							Bulpitt	Burco
Model	"Wringer Amplewash"	"Amplewash"	SS	RS	RS	CRS	RJ	600	530F
Type	Square cabinet	Square cabinet	Square cabinet	Round	Round	Round	Round	Round	Round
Size (height, width & depth or height & diam in inches)	36½×18½×18½	30×16½×16½	29×16¾×16¾	27½×19	27½×19	27½×19	27½×16	18½×17½	26½×16½
Tub capacity	10 gal	10 gal	10 gal	10 gal	10 gal	10 gal	8 gal	4 gal	8 gal
Wringer	Yes	No	No	No	No	No	No	No	No
Agitator	£2 5 0 (plus 8s 3d P.T.) extra	No	No	No	No	No	No	No	No
Loading	3 kW	3 kW	3 kW	3 kW	3 kW	3 kW	3 kW	1,800 W	2½ kW
Method of control	D.p. 3-heat rotary, safety cut-out	D.p. 3-heat rotary, safety cut-out	2 foot switches	D.p. rotary	D.p. 3-heat rotary	2 foot switches	2 foot switches	Single heat	3-heat, two foot press switches
Exterior finish	Cream, white or light grey vitreous enamel	Cream, white or light grey vitreous enamel	Cream, white or light grey vitreous enamel	Cream, white or light grey vitreous enamel	Galvanized	Galvanized	Galvanized	Galvanized	Galvanized
Tub finish	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Galvanized	Tinned copper
Price	A.c.: £25 15 0 D.c.: 12s extra	A.c.: £14 15 0 (light grey 5s less) D.c.: 12s extra	£12 18 0	A.c.: £11 (grey 5s less, safety control £1 5s extra) D.c.: 12s extra	A.c.: £9 15 0 (safety control £1 5s extra) D.c.: 12s extra	£8 19 6 (safety cut-out extra)	£8 16 0	£6 10 0	A.c./d.c.: £9 7 3



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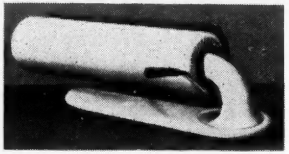

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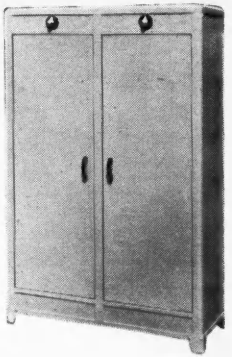

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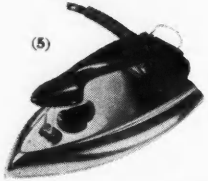

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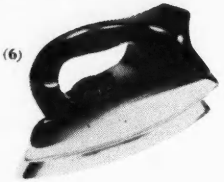

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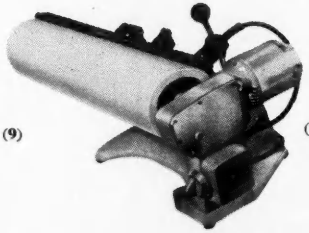

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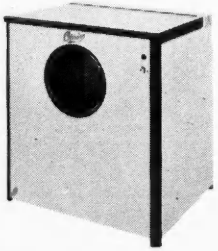

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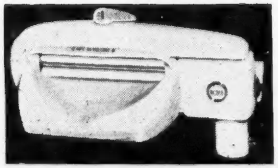
(1) Amplec "Wringer Ample Wash" boiler. (2) The British Vacuum Cleaner & Engg. Co.'s "Goblin" heat controlled iron weighs 4¼ lb and has a loading of 750 W. The price is £2 12s 6d. (3) The Metway automatic iron is supplied in chrome and colours. (4) The De Renzi, Holmes "Pressmatic" rotary ironer (£24, plus £8 15s 6d) has a roller 21in long and 5¼in in diameter and a 1,200 W thermostatically controlled element. (5) The Morphy Richards lightweight travel iron (£2 5s) weighs only 1¾ lb. The handle folds flat for packing. (6) Revo "Litomatic" iron (£2 4s), which weighs 3½ lb, has a quick heating soleplate. (7) Elga "Gad-About" travelling iron (£1 18s 6d) folds flat, weighs 1½ lb and is fitted with a b.c. adaptor and connector. (8) J. Glover model F.48 "Snowhite" drying cabinet (£75 15s, plus £29 10s 10d P.T.) has a 5½ kW loading. (9) Oprim rotary ironer (£25, plus £9 15s P.T.). (10) Oprim drying cabinet (£40, plus £14 12s 6d P.T.). (11) The British Vacuum Cleaner & Engg. Co.'s "Goblin Regal" cleaner (16 gns, plus £6 2s 10d P.T.) incorporates an electrically driven beater brush and a pilot light to show up dirt in dark corners. (12) Vacuums "Bustler" cleaner is fitted with a long handle for general cleaning and a shorter handle for stairs, upholstery, etc. Complete with all tools it costs £15 (plus £5 12s 6d P.T.). (13) This Acme wringer is supplied both as part of a washing machine and separately for use on a stand. (14) Thor Model 66 hand cleaner (£7 5s, plus £2 8s 4d P.T.)



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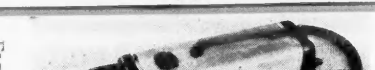

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acme wringer is supplied both as part of a washing machine and separately for use on a stand. **(14)** Thor Model 66 hand cleaner (£7 5s, plus £2 8s 4d P.T.)

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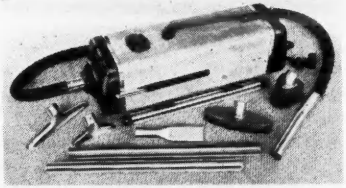

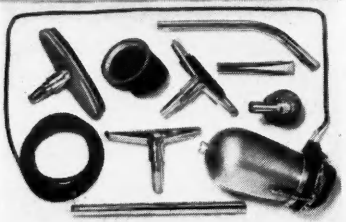

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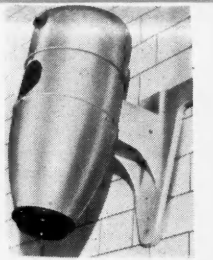

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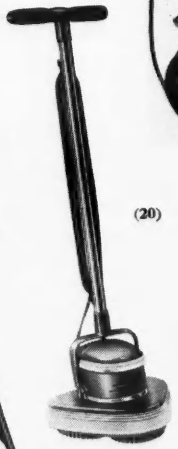

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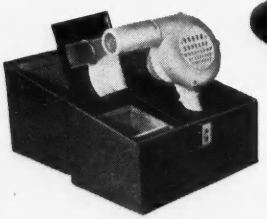

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(15) Phœnix canister "Power Flow" box type model cleaner (£11 9s 1d, plus £4 5s 11d P.T.). **(16)** The Water Softener & Vacuum Cleaner Service lightweight "Jifextra" vacuum cleaner requires little effort to use and is specially useful for cleaning under low furniture. The price is £11 5s 6d, plus £4 4s 6d, including one brush, or 12s 6d extra for both. **(17)** The Burgess sprayer (£3 15s) can be used for paint, varnish, lacquer, light oils and insecticides. **(18)** The Bylock wall mounting hand dryer is fitted with a separate foot operated mercury switch. For blue, grey or oyster green the price is £21 12s 6d, for cream it is £22 12s 6d. **(19)** The Electrolux "Electrux Model 48" (£17, plus £6 4s 3d P.T.) is intended for the smaller home. It is especially quiet in operation. **(20)** The Bylock "President" floor polisher (£16 17s 6d, plus £6 3s 5d P.T.) incorporates a ¼ h.p. motor driving three bristle brushes which "float" to permit use on uneven floors. A set of burnishing pads is included. **(21)** Fractional H.P. Motors hairdryer. **(22)** The L. G. Hawkins "Supreme" hairdryer (£3 19s 7d, plus 15s P.T.) is available with a scenting attachment. The case costs £2 9s 6d. **(23)** Brown Bros. "Duco" standard hairdryer costs £3 9s 6d (plus 13s P.T.). The "Boudoir" model is available in walnut (£2 18s, plus 10s 10d P.T.) and peach (£3 4s, plus 12s P.T.). **(24)** In the Tellus cleaner the dirt is collected in a metal container which is hygienic and easy to empty. For use with it there are a sprayer and a hairdryer. The S.55 model (375 W) costs £26 5s (plus £9 18s 4d P.T.) and the R.40 (160 W) £22 10s (plus £8 10s P.T.). **(25)** G.E.C. floor polisher (£19 10s, plus £7 2s 7d P.T.)

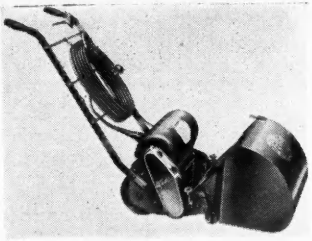
WASHBOILERS . . . . . *continued*

Manufacturer:	Burco (*continued*)						Dugdale	G.E.C.	L. G. Hawkins
Model	375AS	600AS	E650AS	E840AS	E900AS	763DX	—	DE4774/S	"Dinky" LGH.1400
Type	Round	Round	Round	Cabinet	Cabinet	Round	Round	Round	Round
Size (height, width & depth or height & diam in inches)	28×17¾	28×17¾	28×17¾	30×17½×17½	30×17½×17½	31¾×19¾	26×18	27×19½	10½×10½
Capacity	10 gal	10 gal	10 gal	10 gal	10 gal	16 gal	8 gal	10 gal	3 gal
Wringer	No	No	No	No	Yes	No	No	No	No
Agitator	Agitator lid unit available for all models for £2 5s 6d plus 8s 4d P.T.						No	No	No
Loading	3 kW	3 kW	3 kW	3 kW	3 kW	4½ kW	2,550 W	3 kW	1,250 W
Method of control	D.p. rotary switch	D.p. rotary switch	D.p. rotary switch	3-heat, d.p. rotary switch	3-heat, d.p. rotary switch	3-heat rotary switches	3-heat	Two switches, 3-heat	Thermal cut-out
Exterior finish	Galvanized	Galvanized	White or cream enamel	White or cream enamel	White or cream enamel	Galvanized	Galvanized	Galvanized or vitreous enamel	Frosted aluminium
Tub finish	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	—	Frosted aluminium
Price	A.c.: £9 0 0 A.c./d.c.: £9 4 8	A.c.: £10 11 6 A.c./d.c.: £10 16 0	A.c.: £12 2 3 A.c./d.c. £12 6 0	A.c.: £16 0 10 A.c./d.c.: £16 5 6	A.c.: £22 5 10 A.c./d.c.: £22 10 6 Without wringer £5 9 0 less	A.c.: £18 5 3 A.c./d.c.: £18 9 11	£9 10 0	£10 12 0 (£1 2 0 extra for automatic cut-out)	£3 9 6

Manufacturer:	Jackson				Samuel Simister				Simplex
Model	D906	907	D906	907	No. 5 Square	Standard Super	"Competitor"	No. 7	C.80
Type	Round	Round	Round	Round	Cabinet	Round	Round	Round	Round
Size (height, width & depth or height & diam in inches)	27½×17¾	27½×17¾	27½×17¾	27½×17¾	30×18½×18½	28×17½	28×17½	24×15½	26½×19½
Tub capacity	10 gal	10 gal	10 gal	10 gal	10 gal	10 gal	10 or 8 gal	7½ gal	10 gal
Wringer	No	No	No	No	No	No	No	No	No
Agitator	No	No	No	No	No	No	No	No	No

Agitator	No	No	No	No	No	No	No	No	No
Loading	3 kW	3 kW	3 kW	3 kW	3 kW	3 kW	10 gal: 3 kW 8 gal: 2½ kW	2 kW	3 kW
Method of control	D.p. rotary switch	Two d.p. switches, auto-cut-out	D.p. rotary switch	Two d.p. switches, auto-cut-out	Press switches	Press switches	Press switches	Press switches	Two d.p. switches
Exterior finish	Galvanized	Galvanized	White or cream enamel	White or cream enamel	Enamelled as desired	Galvanized steel	Galvanized steel	Galvanized steel	Cream
Tub finish	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned copper	Tinned
Price	£9 19 0	£11 4 0	£10 10 0	£11 15 0	£13 10 0	£9 15 0	10 gal: £9 0 0 8 gal: £8 13 0	£8 0 0	£11 8 6

Manufacturer:	**Herman Smith (" Smithilte ")**				**South Wales Switchgear**	**Universal Boilers (" Versco ")**	
Model	—	—	—	—	350/352	" Epic," S3G and S3E	SQ103 and SQ104
Type	Round	Round	Round	Round	Round	Round	Square
Size (height, width & depth or height & diam in inches)	27¾ × 17¾	27¾ × 17¾	24¾ × 17¾	24¾ × 17¾	27½ × 16	28 × 19½	30 × 16 × 16
Tub capacity	10 gal	10 gal	8 gal	8 gal	10 gal	10 gal	10 gal
Wringer	No	No	No	No	No	No	No
Agitator	No	No	No	No	£1 16s plus 14s P.T	No	No
Loading	3 kW	3 kW	3 kW	3 kW	3 kW	3 kW	3 kW
Method of control	3-heat rotary switch	3-heat rotary switch	3-heat rotary switch	3-heat rotary switch	3-heat, s.p., d.p. or d.p. micro gap cut-out	3-heat, s.p., d.p. or cut-out, a.c. or a.c./d.c.	3-heat, s.p., d.p. or cut-out, a.c. or a.c./d.c.
Exterior finish	Cream stove enamel	Galvanized	Galvanized	Cream stove enamel	Tinned copper	Galvanized or cream stove enamel	Cream stove enamel
Tub finish	Hot tinned	Hot tinned	Hot tinned	Hot tinned	Galvanized or stove enamel	Tinned copper	Tinned copper
Price	Not yet settled				£10 9 0 to £14 1 0	£9 15 9 to £12 9 0	£14 18 6 to £16 7 0



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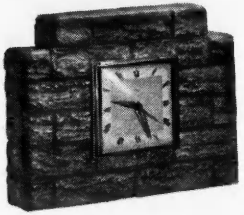

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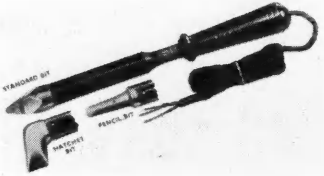

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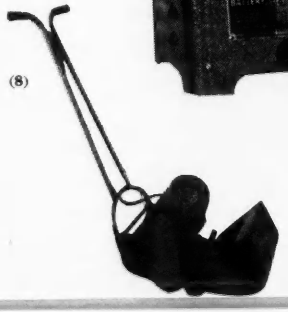

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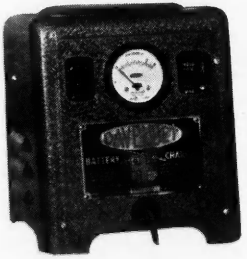

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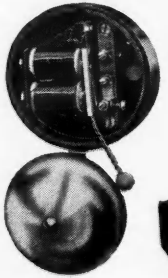

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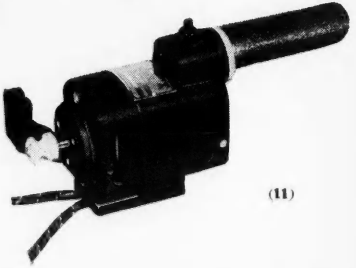

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(**1**) H. C. Webb & Co.'s model " B " 14in lawnmower (£39 10s, plus £7 14s 1d P.T.) is self-propelled and will take an edge-trimming attachment. (**2**) Fitted with a chisel bit, the Wolf solder gun costs £1 5s 6d. (**3**) Rustic castings are employed effectively in this clock supplied by A. Bell & Co., Ltd. (**4**) The J.P. mowers, made in three sizes, 12in, 14in and 16in, are entirely self-propelled, though if desired the cutters only can be driven for mowing round beds, etc. (**5**) This Standard Telephones 150 W soldering iron costs £1 19s 6d. A 100 W model (£1 7s 6d) is also available. (**6**) Rawlplug soldering iron (£1 9s). (**7**) Tarpen lawn trimmer. (**8**) Alexander Shanks & Son " Pilot " 12in lawnmower (£23, plus £4 9s 8d P.T.). (**9**) The Partridge Wilson " Davenset " model H battery charger (£5 17s 6d) has a maximum output of 12 V, 2½ A. (**10**) The Julius Sax Bakelite case bells are supplied with 3 or 4in round, sheep or church gongs. (**11**) The Parvalux sewing machine motor (£5 13s, plus 16s

Domestic Appliances and Their Makers

Full Names and Addresses are Given on Page 885

AIR CONDITIONERS:—Aerovap (germicidal), Air Impeller, Airscrew, Barber, E.C.D., Fenton Byrn, G.E.C., Industrial Humidifiers, Lightfoot, Longford Engg., Magnetic Equipment, J. & H. Walter.

BATTERY CHARGERS:—A.C.E.C., Ardente, Banner, Crypton, Easco, Edison Swan, G.E.C., I.R.L., Majestic, Partridge Wilson, Ray Engg., Runbaken, Standard Telephones, Westinghouse.

BEDWARMERS:—Baldwin, Chalfont, Electrothermal Engg., Hall & Veret, Hope, Isopad, Singleton, Thermoset.

BELLS:—British General Mfg., G.E.C., Gent, Julius Sax, Ward & Goldstone.

BLANKETS & PADS:—Baldwin, Bestfrend, Bulpitt, Chalfont, Dowsing, Easipower, Falk Stadelmann, Hope, Hotpoint, Isopad, Milliwatt, Permaheat, Pifco, Premier, Stanley Bros., Thermega, Thermolectrics, Thermoset, Warm-Glow, Windak.

BOILING PLATES & RINGS:—Beanwy, Belling, Carron, Criterion, Dexray, Doughty, Electroway, Engel, English Electric, Falk Stadelmann, French, G.E.C., Hotpoint, Jackson, Metrovick, Metway, Pifco, Revo, Telsen, Tym's Electric, Walls.

CIGARETTE LIGHTERS:—Truvox.

CLOCKS:—Bell, British & Foreign Agencies, British Vacuum Cleaner & Engg., Derby Alabaster, Ferranti, G.E.C., Gent, Metamec, Pifco, Smiths, T.M.C.-Harwell.

CLOTHES AIRERS:—Belling, Heatrae, Hotpoint, Hutchings, Poxon Engg., J. & H. Walter.

COFFEE PERCOLATORS:—Best Products, Bulpitt, Cassirer, Cona, Davidson, Elga, Falk Stadelmann, French, G.E.C., Hague & McKenzie, H.M.V., Hotpoint, Premier, Russell Hobbs, S.L.R., Walls.

CONVECTION HEATERS:—Arora, Belling, Benham, Berry's Electric, Bescol, Bratt Colbran, British National Electrics, E. K. Cole, De Renzi Holmes, Dexray, Dimplex, Electroway, Falk Stadelmann, Fenton Byrn, G.E.C., Gillott, Heatrae, H.M.V., Hounslow, Hulme Atkins, Hurseal, Lossos, Metrovick, Midland Electric Mfg., Poxon Engg., Santon.

COOKERS:—Belling, British National Electrics, Carron, Dexray, English Electric, Falco, G.E.C., Hounslow, Jackson, Metway, Moffats, Parnall (Yate), Revo, Simplex ("Creda"), Tricity, Vidor, Warnford.

DARNERS, ILLUMINATED:—Pifco.

DISH WASHING MACHINES:—Arcason, Dishmaster, Hotpoint, Paul, Staines, Thor.

DOOR CHIMES:—Berry's Electric, Morphy-Richards, Telsen.

DRYING CABINETS:—Belling, Euk, Fenton Byrn, Fisher, Glover, Hounslow, Oprim.

EGG BOILERS:—Hawkins.

FAN HEATERS:—Aerex, Air Impeller, E. K. Cole, Collaro, Fenton Byrn, Hurseal, Metrovick, Spiral Tube & Components.

FANS:—Aerex, Air Impeller, Airscrew, Falk Stadelmann, Fenton Byrn, Frost, G.E.C., Grafton, Hotpoint, Industrial Humidifiers, Keith Blackman, Limit, Pifco, Revo, Vent-Axia.

FIRELIGHTERS:—Sarum.

FIRES:—Arora, Bank Hardware, A. Bell, Belling, Berry's Electric, Bescol, Bratt Colbran, B.N.E., Bulpitt, Carron, Cranmer & Cheshire, Davidson, Dexray, Dowsing, Electroway, Engel, Falco, Falk Stadelmann, Ferranti, French, Frost, G.E.C., Grafton, Hawkins, Heatrae, H.M.V., Hotpoint, Hounslow, Hurseal, Jackson, Kego, Midland Electric Mfg., Morphy-Richards, Premier, Reeves, Revo, Simplex ("Creda"), Sperryn, Telsen, Tym's Electric

FLOOR POLISHERS:—Bylock, Electrix, Electrolux, G.E.C., Hoover, Phœnix, Truvox.

FOOD TROLLEYS:—Blackburn, Doughty, Hawkins, Haywood, Jackson, Bertram Thomas.

FOUNTAINS:—Stokes.

GASLIGHTERS:—Ever Ready.

GREENHOUSE HEATERS:—Early Crops, Fenton Byrn, G.E.C., Heatrae, Hurseal, Santon.

HAIRDRYERS:—Bestfrend, Brown Bros., Bylock, Electrothermal Engg., Falk Stadelmann, Fractional H.P. Motors, Fransen, G.E.C., Hawkins, H.M.V., Morphy-Richards, Ormond, Pifco, Siroma.

HAND-DRYERS:—Bylock, English Electric, Quiz Electrics, Scottish Heat & Vacuum.

HEATING PANELS:—British National Electrics, Bylock, E. K. Cole, Dulrae, Electric Panels, Falk Stadelmann, Heatrae, Hounslow, Hurseal, Isopad, Poxon Engg., Santon, Warnford.

HEDGE TRIMMERS:—Bylock, Tarpen, Wilson.

IMMERSION HEATERS:—Aidas, Backer, Belling, Benham, Berry's Electric, Bescol (for washing machines), Bray, British National Electrics, Bulpitt, Campbell Engg., Chalfont, Controlled Heat Units, Drake & Gorham, Falk Stadelmann, Ferranti, Fisher, G.E.C., Gillott, Heatrae, Hotpoint, Hurseal, Duncan Low, Merlin Mouldings, Metrovick, Metway, Santon, Sarum, Simplex ("Creda"), Telsen.

INSECT KILLERS:—Aerovap, Elga, Falk Stadelmann.

IRONERS:—De Renzi Holmes, G.E.C., Hotpoint, Oprim, Pifco, Wilkins & Mitchell ("Servis").

IRONS, AUTOMATIC:—Ajax, British Vacuum Cleaner & Engg., Bulpitt, Bylock, Cassirer, Easipower, Falco, Falk Stadelmann, French, G.E.C., Grafton, Hawkins, H.M.V., Hotpoint, Metway, Morphy-Richards, Premier, Revo, Simplex ("Creda"), Telsen, Tricity, Tym's Electric, J. & H. Walter (no-cord).

IRONS, NON-AUTOMATIC:—Bank Hardware, Carron, Cassirer, Criterion, Davidson, Falk Stadelmann, French, G.E.C., Grafton, Kenrick, Metway, Pifco, Premier, Revo, Telsen, Tym's Electric.

IRONS, TRAVELLING:—A.B. Metal Products, Criterion, Elga, Falk Stadelmann, G.E.C., Grafton, H.M.V., Metway, Morphy-Richards, Pifco, Telsen, Tym's Electric.

JUGS:—Best Products, Revo.

KETTLES:—Bescol, Best Products, Bulpitt, Cassirer, Chalfont, Davidson, Doughty, Easipower, Elga, Falk Stadelmann, F. & F., French, G.E.C., Grafton, Hague & McKenzie, Hawkins, H.M.V., Hope, Hotpoint, Metway, Premier, Simplex (export only), Ernest Stevens, Sun, Telsen, Tym's Electric.

KETTLES, WHISTLING:—Best Products, Bulpitt, French, Merlin Mouldings.

LAWNMOWERS:—A.M.I Ladybird, J.P. Engg. Nutt, Alexander Shanks, Webb.

LIGHTING FITTINGS:—A.C.E.C., Allom Bros., Allsopp & Booth, Ascog, Benjamin, Berry's Electric, Bristol, British General Mfg., Cone Fittings, Cranmer & Cheshire, Derby Alabaster, Dexray, Downer, Edison Swan, Ekco-Ensign, Forrest, G.E.C., Haywood, Hollman, Homeshade, Hulme Atkins, Kego, Kirolite, Knightshades, Linealux, Linolite, Longford Electric, Wm. McGeoch, Mannock Rayner, Merchant Adventurers, Merlin Mouldings, Metrovick, Osler & Faraday, Philips, Pifco, Quinnell, Ranton, Revo, Herman Smith Smithlite, Speights, Straight-lite Reflectors, Telsen, Fredk. Thomas, Thornton Owen, Ward & Goldstone, Wraithe.

MASSAGERS:—London Commercial Electrical Stores, Pifco.

MEDICAL LAMPS:—A.C.E.C., Barber, French, Hanovia, London Commercial Electrical Stores, Lumsden, Perihel, Philips, Pifco, Raysol, Warnford, Watson.

MIXERS, FOOD & DRINK:—Brown Bros., English Electric, Falk Stadelmann, G.E.C., Insulations & Constructions, Kenwood, Siroma.

PAINT STRIPPERS:—Baronet, Chalfont, Metrovick.

PLATE WARMERS:—Belling, English Electric, H.M.V., Hotpoint, Bertram Thomas.

RADIO SETS:—Ace, Balcombe, Beethoven, E. K. Cole, Cossor, Dulci, E.M.I., Ever Ready, Ferranti, G.E.C., Invicta, Kolster-Brandes, McMichael, Majestic, Masteradio, Merlin Mouldings, Murphy, Philips, Portogram, Pye, Rainbow, Raymond-Electric, R.M., Sobell, Stratton, Ultra, Vidor.

REFRIGERATORS:—Astral, Balcombe, Electrolux, English Electric, Frigidaire, G.E.C., H.M.V., Hotpoint, Insulations & Constructions, International Refrigeration ("Coldrator"), Kelvinator, Lightfoot, Longford Engg., Prestcold, Wilkins & Mitchell ("Servis").

REFUSE DISPOSAL UNITS, SINK:—Dishmaster.

SEWING MACHINE MOTORS:—A.C.E.C., Carter, G.E.C., Hillman, Jones, London Commercial Electrical Stores, Parvalux.

SHAVERS:—Chilton, Easipower, Fransen, Philips, Pifco, Remington Rand.

SOIL-HEATING EQUIPMENT:—Banner, Chalfont, Early Crops, French, G.E.C., Santon, Warm-Glow.

SOLDERING IRONS:—Acru, Adcola, Browning's Electric, French, G.E.C., Metal & Electro Chemicals, Metrovick, Rawlplug, Runbaken, Standard Telephones, Telsen, Wolf.

SPRAYERS:—Burgess Products, Bylock, Electrix, Phœnix.

TEA-MAKING APPARATUS:—British Vacuum Cleaner & Engg., Hawkins, Manchester Precision Tools, Pifco, Pye.

TELEVISION SETS:—Ace, Ardente, Balcombe, Beethoven, E. K. Cole, Cossor, E.M.I., English Electric, Ferranti, G.E.C., Invicta, Kolster-Brandes, McMichael, Masteradio, Murphy, Philips, Pye, Rainbow, Raymond-Electric, R.M., Sobell, Ultra, Vidor.

TOASTERS, AUTOMATIC:—De Renzi Holmes, Elga, Falk Stadelmann, G.E.C., Morphy-Richards, Vidor.

TOASTERS, NON-AUTOMATIC:—A.B. Metal Products, Bulpitt, Davidson, Easipower, G.E.C., Hotpoint, Ormond, Premier, Telsen.

TOOLS, PORTABLE:—Black & Decker, Wolf.

TOWEL RAILS:—Belling, Dulrae, Heatrae, Lan-bar.

TROUSER CREASERS:—Falk Stadelmann, Pifco.

TUBULAR HEATERS:—Arora, Bescol, British National Electrics, Chalfont, E. K. Cole, Early Crops, Electroway, Falk Stadelmann, G.E.C., Heatrae, Metrovick, Wardle.

UTENSILS, GROUND BASE:—Bulpitt, Buncher & Haseler, Corfield-Sigg, Easipower, G.E.C., Hague & McKenzie, Ernest Stevens.

VACUUM CLEANERS, CANISTER:—New Welbeck, Tellus.

VACUUM CLEANERS, CYLINDER:—British Vacuum Cleaner & Engg., Brown Bros., Bylock, Electrix, Electrolux, Express, G.E.C., Hoover, Siroma, Albert Taylor, Thor.

VACUUM CLEANERS, HAND:—Brown Bros., Bylock, Electrix, Express, Falk Stadelmann, Hoover, Siroma, Albert Taylor,

Thor, Vacuums, Water Softener & Vacuum Cleaner Service (" Jifextra ").

VACUUM CLEANERS, UPRIGHT:—British Vacuum Cleaner & Engg., Brown Bros., G.E.C., Hoover, Hotpoint, Morphy-Richards, Phœnix, Siroma, Albert Taylor, Thor, Vacuums.

WAFFLE IRONS:—S.I..R.

WASHBOILERS:—Alder, Amplec, Brailsford, Bulpitt, Burco, Chalfont, Dugdale, G.E.C., Hawkins, Jackson, Samuel Simister, Simplex (" Creda "), Herman Smith Smithlite, South Wales Switchgear, Universal Boilers.

WASHING MACHINES:—Ajax, Bendix, British Vacuum Cleaner & Engg., Burco, Carefree, Clegg & Coupe, Cotto, English Electric, Fisher, G.E.C., Hawkins (sink attachment for use with vacuum cleaner), Hoover, Hotpoint, Longford Electric, Marlow & Wildman, Parnall (Yate), Thor, Universal Boilers, Wilkins & Mitchell (" Servis ").

WATER HEATERS, INSTANTANEOUS:—Campbell Engg., Rodway Jones.

WATER HEATERS, STORAGE:—Aidas, Berry's Electric, British National Electrics, Ferranti, Fisher, G.E.C., Heatrae, Hotpoint, Hurseal, Duncan Low, Metrovick, Santon, Simplex (" Creda "), W. H. Smith & Co.

WRINGING MACHINES:—A. C. E. C., Fisher, Hotpoint, Parnall (Yate).

Domestic Appliance Manufacturers

Names and Addresses of Firms Referred to in this Issue

A.B. METAL PRODUCTS, LTD., Ynysboeth, Abercynon.
A.C.E.C., 56, Victoria Street, London, S.W.1.
ABERDARE ELECTRIC CO., LTD., 36, Victoria Street, London, S.W.1.
ACE RADIO, LTD., Tower Road, Willesden, London, N.W.10.
ACME WRINGERS, LTD., David Street, Bridgeton, Glasgow.
ACRU ELECTRIC TOOL MNFG. CO., LTD., Chapel Street, Levenshulme, Manchester, .
ADCOLA PRODUCTS, LTD., Cranmer Court, Clapham High Street, London, S.W.4.
AEREX, LTD., 6–7, New Bridge Street, London, E.C.4.
AEROVAP HOLDINGS, LTD., 23, Old Bond Street, W.1.
AIDAS ELECTRIC, LTD., Sadia Works, Northolt.
AIR IMPELLOR & ENGINEERING CO. (THE), 32, Pratt Street, Camden Town, London, N.W.1.
AIRSCREW CO. & JICWOOD, LTD., Weybridge.
AJAX DOMESTIC APPLIANCES, LTD., West Mount Works, Johnson Street, Halifax.
ALDER ELECTRICAL APPLIANCES, LTD., Rushworth Street, Burnley, Lancs.
ALLOM BROS., LTD., Lombard Road, London, S.W.16.
ALLSOPP & BOOTH, LTD., Church Lane, Dudley Port, Tipton.
AMPLEC, LTD., Grange Works, Grange Lane, Accrington.
ARCASON PRODUCTS, LTD., 34, Upper Brook Street, London, W.1.
ARDENTE ACOUSTIC LABORATORIES, LTD., 62, Horn Lane, London, W.3.
ARORA CO., 67, Rosebery Street, Loughborough.
ASCOG, LTD., 44, Theobalds Road, London, W.C.1.
ASTRAL EQUIPMENT, LTD., 96, Buchanan Street, Glasgow.

BACKER ELECTRIC CO., LTD., Fitzwilliam Road, Rotherham.
BALCOMBE, A. J., LTD., 52–58, Tabernacle Street, E.C.2.
BALDWIN, H. J., & CO., LTD., Baldwin House, Nottingham.
BANK HARDWARE MANUFACTURING CO., LTD., Pleck Road, Walsall.
BANNER ELECTRIC CO., LTD., Burford House, Hoddesdon.
BARBER ELECTRICAL SERVICES, Leach Street, Birmingham, 1i.
BARONET ELECTRICAL DEVELOPMENTS, 20, Regent Road, Harborne, Birmingham, 17.
BEETHOVEN ELECTRIC EQUIPMENT, LTD., 89–95, Reddich Lane, Gorton, Manchester, 4.
BELL, A., & CO., LTD., 1A & 3, Gold Street, Northampton.
BELLING & CO., LTD., Bridge Works, Southbury Road, Enfield.
BENDIX HOME APPLIANCES, LTD., Albion Works, Kingsbury Road, Birmingham, 24.
BENHAM & SONS, LTD., 66, Wigmore Street, London, W.1.
BENJAMIN ELECTRIC, LTD., Tariff Road, London, N.17.
BERRY'S ELECTRIC, LTD., Touchbutton House, Newman Street, London, W.1.
BESCOL (ELECTRIC), LTD., 118, Parkfield Road, Saltley, Birmingham, 8.
BEST PRODUCTS, LTD., Felix Works, Felixstowe, Suffolk.
BESTFREND ELECTRICAL CO., LTD., Diceland Works, Banstead.
BLACK & DECKER, LTD., Harmondsworth, Middlesex.
BLACKBURN, C. H., & CO., LTD., 10, Gray's Inn Road, London, W.C.1.
BRAY, GEO., & CO., LTD., Leicester Place, Leeds, 2.
BRISTOL, CHAS. F., & SON, LTD., 62, Regent Place, Birmingham, 1.
BRITISH & FOREIGN AGENCIES, LTD., 37, Colvend Street, Glasgow, S.E.
BRITISH GENERAL MNFG. CO. (1941), LTD., 38, Glasshill Street, London, S.E.1.
BRITISH NATIONAL ELECTRICS, LTD., Newarthill, Motherwell, Lanarkshire.
BRITISH VACUUM CLEANER & ENGINEERING CO., LTD., Goblin Works, Leatherhead.
BROWN BROS., LTD., Great Eastern Street, London, W.C.2.
BROWNING'S ELECTRIC CO., LTD., Boleyn Castle, Green Street, London, E.13.
BULPITT & SONS, LTD., Icknield Street, Birmingham, 18.
BUNCHER & HASELER, LTD., Branston Street, Birmingham, 18.
BURCO, LTD., Waterside Mill, Rose Grove, Burnley.
BURGESS PRODUCTS CO., LTD., Hinckley, Leicester.
BYLOCK ELECTRIC, LTD., South Street, Enfield.

CAMPBELL ENGINEERING CO., LTD., Bromley, Kent.
CAREFREE DOMESTIC APPLIANCES, LTD., 44–48, Adeline Street, Manchester, 4.
CARRON COMPANY, Carron, Falkirk.
CARTER ELECTRICAL CO., LTD., Eastern Works, Eastern Avenue, Romford
CASSIRER, H., LTD., 31, Pinner Road, Harrow.
CHALFONT ELECTRICAL PRODUCTS, LTD., Tyrrell Street, Leicester.
CHESHIRE, MAURICE, & CO., 215, Moseley Street, Birmingham, 5.
CLEGG & COUPE, LTD., Molesworth Street, Rochdale.
COLE, E. K., LTD., Ekco Works, Southend-on-Sea.
COLLARO, LTD., By-Pass Road, Barking.
CONA, LTD., Peldon Works, Railway Place, Wimbledon.
CONE FITTINGS & CO., 9, Rosemont Road, London, N.W.3.
CONTROLLED HEATING UNITS (LONDON), LTD., Avenue Road, Hampton, Middlesex.
CORFIELD-SIGG, LTD., Trafalgar Works, London, S.W.19.
COSSOR, A. C., LTD., Highbury Grove, London, N.5.

COTTO PRODUCTS, Enterprise Works, Scunthorpe.
CRANMER & CHESHIRE, LTD., 7–9, Steward Street, Birmingham, 18.
CRITERION ELECTRIC, LTD., Abbey Estate, Mount Pleasant, Alperton.
CRYPTON EQUIPMENT, LTD., Bridgwater.

DAVIDSON, A. D., ELECTRIC CO., 62, Granville Street, Birmingham, 1.
DE RENZI, HOLMES & CO., LTD., Fox's Lane Wolverhampton.
DERBY ALABASTER (ART PRODUCTS), CO., 40, Crosby Street, Derby.
DEXRAY ENGINEERING CO., LTD., Brock Street, Lees Street, Manchester, 1.
DIMPLEX, LTD., Totton, Southampton.
DISHMASTER (LONDON), LTD., 151, Great Portland Street, London, W.1.
DOUGHTY, J. M., & SONS, 214, St. John Street, London, E.C.1.
DOWNER, G. V., 29B, Torrington Square, London, W.C.1.
DOWSING CO. (ELECTRICAL MANUFACTURERS), LTD., Kangley Bridge Road, Lower Sydenham, London, S.E.26.
DRAKE & GORHAM WHOLESALE, LTD., 77, Long Acre, London, W.C.2.
DUGDALE MANUFACTURING CO., Craven Sheet Metal Works, Settle, Yorks.
DULCI CO., LTD., 97, Villiers Road, London, N.W.2.
DULRAE, LTD., Griffin Lane, Aylesbury.

E.C.D., LTD., Tonbridge.
E.M.I. SALES & SERVICE, LTD., Hayes, Middlesex.
EARLY CROPS (ELECTRICAL), LTD., 12–15, Lupin Street, Birmingham, 7.
EASCO ELECTRICAL, LTD., 6–8, Brighton Terrace, London, S.W.9.
EASIPOWER, LTD., 213–215, Gloucester Place, London, N.W.1.
EDISON SWAN ELECTRIC CO., LTD., 155, Charing Cross Road, London, W.C.2.
EKCO-ENSIGN ELECTRIC, LTD., 45, Essex Street, W.C.2.
ELECTRIC PANELS, LTD., 123, Blackborough Road, Reigate.
ELECTRIX, LTD., Sterling Works, Dagenham.
ELECTROLUX, LTD., 153–155, Regent Street, London, W.1.
ELECTROTHERMAL ENGINEERING, LTD., 270, Neville Road, London, E.7.
ELECTROWAY HEATERS, LTD., Sparrow Hill, Loughborough.
ELGA PRODUCTS, LTD., Railway Place, London, S.W.19.
ENGEL, S. L., 23–25, Kensington Park Road, London, W.11.
ENGLISH ELECTRIC CO., LTD., Queens House, Kingsway, London, W.C.2.
EUK CATERING MACHINERY, LTD., Wellington Street, Oldham.
EVER READY CO. (GREAT BRITAIN), LTD., Hercules Place, London, N.7.
EXPRESS VACUUM CLEANER CO., 96, Bath Street, Birmingham, 4.

F. & F. ELECTRICAL FITTINGS CO., LTD., 33, Alfred Place, London, W.C.1.
FALCO ELECTRICAL APPLIANCES, LTD., Corporation Road, Audenshaw, Manchester.
FALK, STADELMANN & CO., LTD., 91, Farringdon Road, London, E.C.1.
FENTON BYRN & CO., LTD., Airflow Works, 21, Berrylands Road, Surbiton.
FERRANTI, LTD., Hollinwood, Lancs.
FISHER, H. (OLDHAM), LTD., Pennant Street, Oldham.
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FRANSEN, JOHN A., LTD., Northwood, Middlesex.
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FROST, H., & CO., LTD., Fieldgate, Walsall.

GENERAL ELECTRIC CO., LTD., Magnet House, Kingsway, London, W.C.2.
GENT & CO., LTD., Faraday Works, Leicester.
GILLOTT ELECTRO-STEAM COOKERS, LTD., Cotswold Works, Chalford, nr. Stroud, Glos.
GLOVER, J., & SONS, LTD., 39–49, Groton Road, London, S.W.18.
GRAFTON HEATER CO., LTD., 13–15, Westland Place, London, N.1.

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HAGUE & MCKENZIE, LTD., Pyramid Works, Sloane Street, Birmingham, 1.
HALL & VERET, LTD., 434, Rochester Way, Sidcup, Kent.
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HAWKINS, L. G., & CO., LTD., 30–35, Drury Lane, Kingsway, London, W.C.2.
HAYWOOD, THOMAS, & SONS, LTD., Falcon Forge, Coulsdon.
HEATRAE, LTD., Heatrae Works, Norwich.
HILLMAN ELECTRICAL, LTD., 2–3, Northwold Buildings, Northwold Road, London, N.16.
HOLLMAN, Oswald, 208, Kent House Road, Beckenham.
HOMESHADE CO., LTD., 99, Baker Street, London, W.1.
HOOVER, LTD., Perivale, Greenford, Middlesex.
HOPE, DAVID, & CO., LTD., Nugent Street, Leicester.
HOTPOINT ELECTRIC APPLIANCE CO., LTD., Peterborough.
HOUNSLOW, C., & CO., LTD., Chalex Works, Southwick.
HUME, ATKINS & CO., LTD., New Icknield Way, Letchworth.
HURSEAL, LTD., 229, Regent Street, London, W.1.
HUTCHINGS, A. E., & CO., Kingsley Road, Bideford.

I.R.L. PRODUCTS, LTD. No. 5 Factory, Upper Bristol Road, Bath.
INDUSTRIAL HUMIDIFIERS, LTD., Anchor Works, Asfordby Street, Leicester.
INSULATIONS & CONSTRUCTIONS, LTD., St. John's Works, Penn, Bucks.
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INVICTA RADIO, LTD., Parkhurst Road, London, N.7.
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J.P. ENGINEERING CO., LTD., Meynell Road, Leicester.
JACKSON ELECTRIC STOVE CO., LTD., 143, Sloane Street, London, S.W.1.
JONES, G. E., & SONS (MACHINE PARTS), LTD., Lea Bridge Factory Estate, Argall Avenue, London, E.10.

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KEITH BLACKMAN, LTD., Mill Mead Road, London, N.17.
KELVINATOR, LTD., 258, Grays Inn Road, London, W.C.1.
KENRICK, ARCHIBALD, & SONS, LTD., Kenrick House, Newman Street, London, W.1.
KENWOOD ELECTRIC, LTD., 26, North Audley Street, London, W.1.
KIROLITE PRODUCTS, LTD., 107, Southwick Road, Boscombe East, Bournemouth.
KNIGHTSHADES, LTD., Derby Road Works, Montague Road, London, N. 18.
KOLSTER-BRANDES, LTD., Foots Cray, Sidcup.

LADYBIRD A.M.I., Emmbrook Mill, Wokingham.
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LIGHTFOOT REFRIGERATION CO., LTD., Abbeydale Road, North Circular Road, Wembley.
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LINEALUX, LTD., 142, Liverpool Road, London, N.1.
LINOLITE, LTD., 118, Baker Street, London, W.1.
LONDON COMMERCIAL ELECTRICAL STORES, LTD., 20–22, Cursitor Street, Chancery Lane, London, E.C.4.
LONGFORD ELECTRIC CO., 8, Grosvenor Street, Manchester, 1.
LONGFORD ENGINEERING CO., LTD., Shripney Works, Bognor Regis.
LOSSOS, M. & J., & CO., LTD., 31, Beethoven Street, London, W.10.
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LUMSDEN LAMP CO., Milburn, Almondbank, Perth.

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MCMICHAEL RADIO, LTD., 190, Strand, London, W.C.2.
MAGNETIC EQUIPMENT CO., LTD., Lake Works, Wicor, Porchester.
MANCHESTER PRECISION TOOLS, 91–97, London Road, Manchester, 1.
MANNOCK RAYNER, LTD., 21, Varndell Street, London, N.W.1.
MARLOW & WILDMAN, 25, St. Pancras Way, London, N.W.1.
MASTERADIO, LTD., 10–20, Fitzroy Place, London, N.W.1.
MERCHANT ADVENTURERS, LTD., 43, Portland Road, London, W.11.
MERLIN MOULDINGS, LTD., 3, Central Parade, S.E.6.

METAL & ELECTRO CHEMICALS, LTD., Alliance House, Caxton Street, London, S.W.1.
METAMEC, LTD., South Green, Dereham, Norfolk.
METROPOLITAN-VICKERS ELECTRICAL CO., LTD., Trafford Park, Manchester, 17.
METWAY ELECTRICAL INDUSTRIES, LTD., Metway Works, King Street, Brighton.
MIDLAND ELECTRIC MFG. CO., LTD., M.E.M. Works, Reddings Lane, Birmingham, 11.
MILLIWATT, LTD., 44, Princes Road, London, N.W.1.
MOFFATS (OVERSEAS), LTD., 1, Newman Street, W.1.
MORPHY-RICHARDS, LTD., 121, Victoria Street, S.W.1.
MURPHY RADIO, LTD., Welwyn Garden City.

NEW WELBECK, LTD., 94, New Bedford Road, Newton, Beds.
NUTT ENGINEERING CO., LTD., Norwich Street, Cambridge.

OPRIM SALES, LTD., Park Way, Edgware.
ORMOND ENG. CO., LTD., Ormond House, Rosebery Avenue, London, E.C.1.
OSLER & FARADAY, LTD., 89–91, Newman Street, S.W.1.

PARNALL (YATE), LTD., 255, North Circular Road, London, N.W.10.
PARTRIDGE, WILSON & CO., LTD., Davenset Electrical Works, Evington Valley Road, Leicester.
PARVALUX, LTD., Broom Road, Parkstone, Dorset.
PAUL, W. H., LTD., Longmore Lane, Breaston, Derby.
PERIHEL, LTD., 17–19, Edge Street, London, W.8.
PERMAHEAT, LTD., Spectator Street, Manchester, 4.
PHILIPS ELECTRICAL, LTD., Century House, Shaftesbury Avenue, London, W.C.2.
PHOENIX SALES, LTD., Winton House, St. Andrew Street, London, E.C.4.
PIFCO, LTD., Pifco House, Watling Street, Manchester, 4.
PORTOGRAM RADIO & ELECTRICAL INDUSTRIES, LTD., Preil Works, St. Rule Street, London, S.W.8.
POXON, H. G., ENGINEERING CO., 1, Northolt Road, Harrow.
PREMIER ELECTRIC HEATERS, LTD., Keeley Street, Birmingham, 9.
PRESSED STEEL CO., LTD., Cowley, Oxford.
PYE, LTD., Radio Works, Cambridge.

QUINNELL, R. H., & CO., Rowhurst Forge, Oxshott Road, Leatherhead.
QUIZ ELECTRICS, LTD., 160, High Street, Teddington.

R.M. ELECTRIC, LTD., Kingsway, Team Valley, Gateshead.
RAINBOW RADIO MNFG. CO., LTD., Mincing Lane, Blackburn.
RANTON & CO., LTD., Commerce Road, Brentford High Street, Brentford.
RAWLPLUG CO., LTD., Rawlplug House, Cromwell Road, London, S.W.7.
RAY ENGINEERING CO., LTD., Waterdale Works, Southmead, Bristol.
RAYMOND-ELECTRIC, LTD. Brent Crescent North Circular Road, London, N.W.10.
RAYSOL ELECTRICAL CO., 550, Holloway Road, London, N.7.
REEVES ELECTRICAL & RADIO CO., LTD., Reelek Works, Baldock.
REMINGTON RAND, LTD., Commonwealth House, New Oxford Street, London, W.C.1.
REVO ELECTRIC CO., LTD., Tipton, Staffs.
RODWAY JONES & CO., LTD., 36, Station Road, Westcliffe-on-Sea.
RUNBAKEN ELECTRICAL PRODUCTS, Burton's Buildings, 71–73A, Oxford Road, Manchester, 1.
RUSSELL HOBBS, LTD., 1, Bensham Lane, West Croydon.

S.L.R. ELECTRIC, LTD., 58–60, South Harrow Viaduct, South Harrow.
SANTON, LTD., Somerton Works, Newport, Mon.
SARUM ELECTRIC, LTD., Catherine Court, Salisbury.
SAX, JULIUS, & CO., LTD., 24, Commerce Road, Brentford.
SCOTTISH HEAT & VACUUM, LTD., Stanley Works, Abbot Street, Arbroath.
SHANKS, ALEXANDER, & SON, LTD., 66, Victoria Street, London, S.W.1.
SIMISTER, SAMUEL, & CO., Copper and Tin Works, Croston Street, Bolton.
SIMPLEX ELECTRIC CO., LTD., Creda Works, Blythe Bridge, Staffs.
SINGLETON BROS. (INSTRUMENTS), LTD., Oreston Lane, Effingham, Surrey.
SIROMA ENGINEERING CO., LTD., North Acton Road, London, N.W.10.
SMITH, HERMAN, SMITHLITE, LTD., Empire Works, Dudley.
SMITH, W. H., & CO., 32, Mansfield Street, Churchgate, Leicester.
SMITHS ENGLISH CLOCKS, LTD., Sectric House, Waterloo Road, London, N.W.2.
SOBELL INDUSTRIES, LTD., Langley Park, Slough.
SOUTH WALES SWITCHGEAR, LTD., Blackwood, Mon.
SPEIGHTS, LTD., Classic Works, Mill Road, Dewsbury.
SPIRAL TUBE & COMPONENTS CO., LTD., Honeypot Lane, Stanmore.
STAINES KITCHEN EQUIPMENT CO., LTD., 95, Victoria Street, London, S.W.1.
STANDARD TELEPHONES & CABLES, LTD., Warwick Road, Boreham Wood.
STANLEY BROS., Pool Road, Aldershot.
STEVENS, ERNEST, LTD., Cradley Heath, Staffs.
STOKES FOUNTAINS, LTD., Church House, Godalming.
STRAIGHT-LITE REFLECTORS, LTD., 73, Canonbury Road, London, N.1.
STRATTON & CO., LTD., Alvechurch Road, West Heath, Birmingham.
SUN ELECTRICAL CO., LTD., 118 124, Charing Cross Road, London, W.C.2.

T.M.C. HARWELL (SALES), LTD., 37, Upper Berkeley Street, London, W.1.
TARPEN ENGINEERING CO., LTD., Ixworth House, Ixworth Place, London, S.W.13.
TAYLOR (ALBERT) (MANCHESTER), LTD., Isola Works, Quay Street, Manchester, 3.
TELLUS SUPER VACUUM CLEANER, LTD., 39, Sheen Lane, Mortlake, London, S.W.14.
TELSEN ELECTRIC CO. (1935), LTD., Fitzgeorge Street, Collyhurst, Manchester, 9.
THERMEGA, LTD., Ermyn Way, Leatherhead, Surrey.
THERMOLECTRICS, LTD., Chapel Works, Church Street, Hampton-on-Thames, Middlesex.
THERMOSET APPLIANCES, LTD., Chapel Works, Failsworth, Manchester.
THOMAS, BERTRAM (ENGINEERS), LTD., Worsley Street, Hulme, Manchester.
THOMAS, FREDK., & CO., LTD., Everton Buildings, Stanhope Street, London, N.W.1.
THOR APPLIANCES, LTD., 64–66, Oxford Street, London, W.1.
THORNTON OWEN, LTD., Charles Holland Street, Willenhall, Staffs.
TRICITY COOKERS, LTD., 109, Kingsway, London, W.C.2.
TRUVOX, LTD., Truvox House, Exhibition Grounds, Wembley.
TYM'S ELECTRIC, Systym Works, Kennard Road, Stratford, E.15.

ULTRA ELECTRIC, LTD., Western Avenue, London, W.3.
UNIVERSAL BOILERS & ENGINEERING CO., LTD., Fulledge Works, Burnley.

VACUUMS, LTD., Aldridge Road, Birmingham, 22B.
VENT-AXIA, LTD., 9, Victoria Street, London, S.W.1.
VIDOR, LTD., West Street, Erith.

WALLS, LTD., Palmer Street, Birmingham, 9.
WALTER, J. & H., LTD., Farm Lane, London, S.W.6.
WARD & GOLDSTONE, LTD., Frederick Road, Pendleton, Manchester, 6.
WARDLE ENGINEERING CO., LTD., Elsinore Road, Old Trafford, Manchester, 16.
WARM-GLOW CO., LTD. (THE), 1133, London Road, Leigh-on-Sea, Essex.
WARNFORD CONSTRUCTIONS, LTD., 1, Chesterfield Street, London, W.1.
WATER SOFTENER & VACUUM CLEANER SERVICE, LTD., 248, Romford Road, London, E.7.
WATSON & SONS (ELECTRO-MEDICAL), LTD., East Lane, North Wembley.
WEBB, H. C., & CO., LTD., Tame Road, Birmingham, 6.
WESTINGHOUSE BRAKE & SIGNAL CO., LTD., 82, York Way, London, N.1.
WILKINS & MITCHELL, LTD., The Green, Darlaston.
WILSON, C. I., King Edward Street, Liverpool, 3.
WINDAK, LTD., Woodside, Poynton, Ches.
WOLF ELECTRIC TOOLS, LTD., Pioneer Works, Hanger Lane London, W.5.
WRAITHE BROS., Nuttall Street, Blackburn.

YELSEN, LTD., 9, Hatherley Road, Sidcup.

PERSONAL and SOCIAL

News of Men and Women of the Industry

THE Minister of Fuel and Power has appointed **Mr. D. B. Irving,** B.Sc., M.I.E.E., at present chief engineer of the London Electricity Board, to be deputy chairman of the Board from 1st January next in succession to **Mr. E. A. Mills,** M.I.C.E., M.I.E.E., M.I.Mech.E., who retires at the end of the year on completion of the term for which he was appointed.

Mr. Mills, who has been deputy chairman of the Board since its formation, was educated at

Mr. E. A. Mills

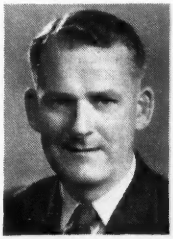
Mr. D. B. Irving

Liverpool College and University, and after periods with the Yorkshire Electric Power Co. and the British Thomson-Houston Co., Ltd., he became assistant to Mr. E. T. Ruthven Murray, Northmet Power Co., in 1912. Two years later he joined the Birmingham Electric Supply Department, and after a year (1917-18) as chief assistant engineer at Leeds, returned to Birmingham. From 1920 to 1928 he was executive engineer, power stations, with the Shanghai Electricity Department, from 1928 to 1931 deputy engineer and manager of the Leicester undertaking and from 1931 to 1934 engineer and manager at Halifax. He was appointed borough electrical engineer at Hackney in 1934, which position he held until his appointment to the London Electricity Board.

Mr. Irving received his education at Ayr Academy and London University, and his practical training with the British Thomson-Houston Co., Ltd., with whom (from 1926 to 1932) he held various positions in London, Sheffield, Bombay and Calcutta. In 1932 he was appointed section engineer, Mid-East England Area, Central Electricity Board, and in 1938 became assistant on the staff of the C.E.B. chief engineer. On nationalization he was appointed construction engineer to the London Electricity Board and in the following year was appointed chief engineer. Mr. Irving was a member of the I.E.E. Supply Section Committee from 1948 to 1951 and is a member of the Registration Board of the National Register of Electrical Installation Contractors. He was awarded the I.E.E. Sebastian de Ferranti Premium in 1945, and is a member of the Societe des Ingénieurs Civils de France.

Mr. S. Erickson, M.I.E.D., for the past four years officer-in-charge of the technical branch drawing office of Government Communications Headquarters, Cheltenham, has resigned his post to take up the appointment of chief draughtsman with A. T. & E. Ltd. (Bridgnorth), Bridgnorth, Shropshire. Previously Mr. Erickson was with Burndept and Morphy-Richards, and was for many years with the General Electric Co., Ltd., at its radio and television works.

Mr. E. B. Thompson has been appointed sales manager of Ekco Electronics, Ltd., and **Mr. R. Y. Parry** the company's technical manager, nucleonics. Mr. Thompson joined the parent company, E. K. Cole, Ltd., in 1937, and in recent years has been responsible for the export sales of "Ekco" communication and electronic equipment. Mr. Parry, who has been with E. K. Cole, Ltd., since 1936, has been associated with the development of "Ekco" nucleonic equipment since its inception.



Mr. E. B. Thompson

Mr. T. C. Beaumont, A.M.I.E.E., Assoc.M.C.T., has been appointed district manager of the Birmingham and Nottingham areas for Veritys, Ltd., and will operate from the Birmingham office at 65, New Street. After serving an apprenticeship with Laurence, Scott & Electromotors, Ltd.,

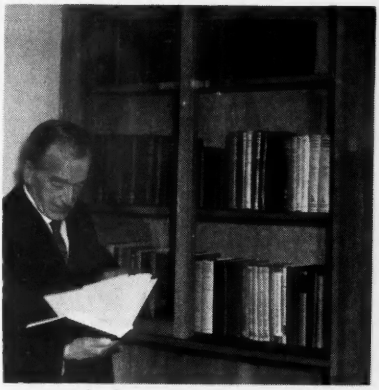
Manchester, he joined the Lancashire Dynamo & Motor Co. in 1932 and served for a period in its Glasgow district office before joining the Metropolitan-Vickers Electrical Co., Ltd., in 1937, where he became machine tool application engineer, serving in that capacity through the war years. In 1947 he became the Lancashire area representative for the Hopkinson Electric Co., Ltd., and joined the staff of Veritys, Ltd., Manchester district office, in 1949.

Mr. C. F. Barnard, general manager of Mirrlees, Bickerton & Day, Ltd., Stockport, has been appointed managing director of that company.

Mr. I. B. Cooke, previously works manager of Fielding & Platt, Ltd., Gloucester, has been appointed a director and general manager of the Hopkinson Electric Co., Ltd., Cardiff. **Mr. J. W. C. Milligan** relinquishes the managing directorship of Hopkinsons, but retains his seat on the board.

Mr. W. Sinclair, A.M.I.E.E., A.M.I.Mech.E., previously superintendent of the Feeder Road power station of the South Western Division, B.E.A., has been appointed superintendent of the Bath and Feeder Road power stations with effect from 1st October.

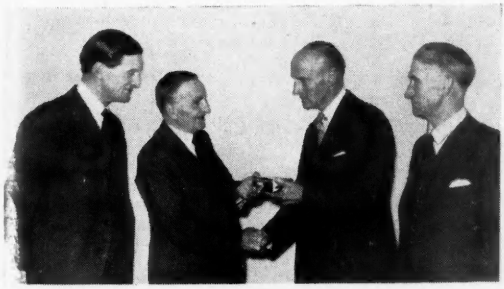
Mr. W. Tonkinson retired from active duty with the Electric Construction Co., Ltd., in March last. He had been with the company since 1898, becoming chief engineer in 1915 and in addition a member of the board in 1942. When he retired, all sections of the works wanted to make him a presentation, and Mr. Tonkinson decided to let it take the form of a technical reference library which would be available for use by all members of the personnel at Bushbury Engineering Works. The library has now been put into being and includes books on a wide variety of technical subjects. It is housed in oak cases in the works waiting room. Mr. W. M. B. Furniss, assistant managing director, formally presented the library to Mr. Tonkinson who said he was sure that it would be of considerable use to many people, especially the younger men in their training years. He handed the library over to representatives of the presentation committee, Mr. W. J. Stay, acting chief engineer, and Mr. S. Clowsley, foreman, commutator section. Mr. W. M. Furniss, chairman and managing director, and Mr. E. W. Walker, director and Birmingham area representative, were also present.



Mr. Tonkinson examining a volume in the new reference library of the Electric Construction Co., Ltd.

Mr. W. J. Adair, who has been district engineer in Lurgan for the Electricity Board for Northern Ireland since 1932, has retired. Before the Board took over, Mr. Adair was engineer and manager (from 1926) of the Council-owned Lurgan electricity station. At a farewell party on 2nd October he was presented with a gift from his colleagues by Mr. J. Higginson, the Board's senior workman in the town. Mr. Adair will be succeeded by **Mr. J. G. Allen,** who was his assistant when the electricity undertaking was controlled by the Council. Since 1932 Mr. Allen has been the Board's district engineer at Omagh.

Mr. H. Nimmo making the presentation to Mr. A. Lockwood. On the left is Mr. R. R. B. Brown, deputy chairman of the S.E.B. and on the right, Ald. J. P. D. Lacey, a member of the Board



On behalf of the members of the Southern Electricity Board Mr. H. Nimmo, chairman, recently presented to **Mr. A. Lockwood** a silver cigarette box as a mark of appreciation of the valuable services he had rendered to the Board. Mr. Lockwood was appointed a part-time member of the Board on 1st March, 1948, and chairman of the Southern

Electricity Consultative Council in August, 1950, from which position he has recently resigned.

Mr. I. M. Lyon, general manager of the Renfrew and Dumbarton Works of Babcock & Wilcox, Ltd., is resigning at the end of the year. He will, however, continue to serve in a consulting capacity. Mr. Lyon joined Babcock & Wilcox, Ltd., in 1923, was promoted works manager of their Renfrew Works in 1946 and was appointed general manager of Renfrew and Dumbarton Works in 1950. He will be succeeded on 1st January by **Mr. D. D. Cruickshank,** who served for several years, until the partition of India, as deputy general manager of the East Indian Railway. He subsequently became a director of Sir William Arrol & Co., Ltd. **Mr. T. Carlile** has been appointed assistant general manager of the Renfrew and Dumbarton Works, also with effect from 1st January. He is at present the company's representative in New York.

Mr. G. L. R. Jones, A.M.I.E.E., the technical director of G.P.U., Ltd. (General Power Undertakings), is now in charge of the company's new advisory technical offices for industry and trade at Lloyd House, 44, Bryanston Street, London, W.1 (telephone : Paddington 4077).

A supper dance organized by the Bristol " Exide " and " Drydex " depot of **Chloride Batteries, Ltd.,** attracted more than 300 guests from the motor, radio and electrical trades in the West Country to the Berkeley, Bristol, on 5th October. They were received by Mr. F. Atkinson, area sales manager, and Mrs. Atkinson.

A watch was presented to **Councillor William Davies** of Tredegar, district commercial manager of the South Wales Electricity Board, on his retirement from the position of secretary of the South Wales centre of the Association of Managerial Electrical Executive. Councillor Davies's successor is **Mr. E. J. Turner,** secretary of the South Wales Division of the B.E.A.

Mr. A. R. Clague, M.Eng., A.M.I.E.E., A.M.I.Mech.E., generation engineer (operation) in the Midlands Division of the British Electricity Authority, has been appointed as chief generation engineer (operation) in the South Eastern Division. He succeeds **Mr. P. Briggs,** M.Inst.F., who is now controller of the Merseyside and North Wales Division.

Mr. A. R. Clague

Mr. Clague served his apprenticeship with the Metropolitan-Vickers Electrical Co., Ltd., where he subsequently worked as a mechanical draughtsman and then as a mechanical engineer. After nine years with the Belfast Corporation Electricity Department as assistant technical engineer and later assistant power station superintendent, he went in 1944 to the West Midlands Joint Electricity Authority, first as assistant generation engineer and then as generation engineer. He took up his present post with the Midlands Division of the Authority when the industry was reorganized in 1948.

A record attendance of over 350 sat down to dinner at the Coronation ball of the **Electrical Trades' Commercial Travellers' Association,** held on 2nd October, under the presidency of Mr. Iliffe and the chairman, Mr. F. Woods, who were attended by their Ladies. Mr. H. W. Hall proposed the toast of the president, and Mr. A. E. Iliffe, in reply, paid tribute to the work being carried out by the Association. Mr. P. E. Pike proposed the toast of the Ladies, and a delightful response was made by Mrs. Iliffe. Ex-chairman Mr. A. Watson gave the toast of Mr. F. Woods, which was received with musical honours. The usual floor show was replaced by a " Coronation Masque," especially

At the Coronation ball of the Electrical Trades' Commercial Travellers' Association, showing (left to right) Mr. F. Woods (chairman) and Mrs. Woods, and Mr. A. E. Iliffe (president) and Mrs. Iliffe receiving the guests

written for the occasion by Mr. H. Bowen. The personnel was provided by the Household Brigade of Guards, including the Life Guards and the "Blues," followed by the Grenadiers, the Coldstreams, the Scots, the Irish and the Welsh Guards. The Grenadier 1st Btn, now doing duty in Buckingham Palace, provided the drum and fife band. Buffet supper was served at midnight and dancing continued until 2 a.m.

Mr. P. H. Harding, A.C.G.I., M.I.E.E., A.M.I.Mech.E., tender engineer of the British Thomson-Houston switchgear works at Willesden, has retired, fifty years after first joining the company at Rugby. Many of Mr. Harding's early years were spent on outside construction schemes in Scotland and England. In 1910 he went to the General Electric Co.'s Test Department at Schenectady and later worked on a variety of schemes in Mexico, Argentina, Burma and India. He returned to Willesden in 1930 to assume control of the Tender Engineering Department.

Sir Arnold Gridley, K.B.E., M.I.E.E., who has represented Stockport in the House of Commons for the past eighteen years, has decided not to seek re-election.

Mr. G. Hughes, A.M.I.E.E., at present district commercial engineer, Reigate, South Eastern Electricity Board, has been appointed senior assistant, low voltage section, in the Chief Commercial Officer's Department at the South Wales Electricity Board's head office.

Sir Leonard Browett, who has been director of the National Union of Manufacturers for the past eight years, is relinquishing that position this month on medical advice.

The annual staff dinner and dance of the **Henley Organization** at the Dorchester, London, W.1, last Saturday, attracted a company of about 650. Mr. W. F. Bishop, C.B.E. (a director), presided, and in responding to the toast of "The Henley Companies" proposed by Mr. W. G. Turner (Brighton branch manager), expressed the regret of the chairman, Sir John Dalton, at his inability to be present. Mr. Bishop welcomed the return of Sir Montague Hughman (the former chairman) after his illness, and then spoke of the progress of the organization, making special reference to the educational scheme which was giving great opportunities to the companies' younger members.

Mr. F. Anderson, general manager of the Cable Company, expressed the appreciation of the whole of the staff of Sir Montague Hughman's work for the organization and its people and made a presentation to him—one of many from various sections of the organization. Sir Montague, in replying, mentioned the happy relationships which he had enjoyed with the companies' staff and workpeople. The toast of "The Ladies" was proposed by Mr. H. Stanley (Tyre Co.) and charmingly replied to by Miss E. Barber (Head Office). After the speeches there was dancing and a cabaret.

On 3rd October **G.E.C. Ambulance and Nursing Teams** competed for the challenge cups given by the Hon. Mrs. Leslie Gamage, C.St.J., county superintendent, Berkshire, and Mr. R. E. Robinson, director of the company's telephone and radio works at Coventry. For the first time the Gamage ambulance cup was won by the G.E.C. (Witton) "A" Division, while the Gamage nursing cup was retained by the G.E.C. (Witton) Nursing Division for the third year in succession. Since the competitions were first held, this division had only suffered one defeat. The G.E.C. (Coventry) nursing cadets again won the Robinson nursing cadet cup. The competitions were followed by tea, over which Mr. J. J. Gracie, director and general manager of the Witton Engineering Works, presided. The Hon. Mrs. Leslie Gamage presented the challenge cups to the winning teams, each member of which also received a personal souvenir. The function was brought to a close with a film show given in the works lecture theatre.

Members of the Athletic Section of the **British Thomson-Houston Co.'s** Willesden works held their annual ball at Wembley Town Hall on 8th October. Presentations of the London Business Houses Amateur Sports Association athletic trophies were made during the evening by Mr. W. Potter-Mackenrot, and athletes from B.T.H., G.E.C., Standard Telephones and London Electricity were amongst those who received awards.

On 9th October Sir Alexander Roger and other directors of **British Insulated Callender's Cables, Ltd.,** joined employees and retired personnel at a party attended by 2,300 people at Blackpool's Tower. After an evening meal at the Winter Gardens and Casino, there was dancing and a cabaret. Before making the homeward journey the party was taken on a tour of Blackpool's illuminations.

OBITUARY

Mr. F. Stretton Smith.—The death occurred on 14th September of Mr. F. Stretton Smith, B.Sc., A.M.I.E.E., chief outside testing engineer of British Insulated Callender's Construction Co., Ltd. Mr. Smith was born in 1899 and received his technical training at the Imperial College, South Kensington. He joined the former Callender's Cable & Construction Co., Ltd., in 1924, and the whole of his working career was devoted to the development and improvement of methods of testing cables and locating cable faults. He was the author of a number of papers on these subjects.

B.E.A. Deputy Chairman to Retire

THE British Electricity Authority announces with regret the decision of Sir John Hacking, M.I.E.E., to relinquish his appointment as deputy chairman (operations) of the Authority on reaching the age of sixty-five on 16th December. Sir John, who received his knighthood in the 1949 New Year's Honours, has been deputy chairman of the Authority since its formation in 1948; he had been a member of the Organization Planning Committee set up in August, 1947.

Sir John was born at Burnley, Lancs, and after serving an apprenticeship with a Leeds firm of motor manufacturers from 1905 to 1908 (during which time he was an evening student at Leeds Technical Institute and Leeds University), he joined the staff of the North Eastern Electric Supply Co., Ltd., as a junior assistant and had varied experience with that company until 1913. In that year he joined Messrs. Merz and McLellan, with whom he stayed for twenty years. From 1913 to 1915 he was engaged in Newcastle on work in connection with Argentine railway electrification schemes, and in 1915 he went to Argentina as assistant to the firm's representative supervising the constructional work in connection with these schemes which involved power stations, substations, track equipment and rolling stock.

Sir John Hacking

He returned to England in 1923 and was for two years chief assistant in the traction department of Merz and McLellan's London office. Two years later he became liaison officer for the firm in connection with overseas contracts and visited the United States, South Africa (in connection with the Natal main line railway) and Bombay (electrification of the Great India Peninsula and Bombay-Baroda Railways). From 1929 to 1933 he supervised for Merz and McLellan the construction of the grid in Mid-East and North-East England. In 1933 he paid another visit to India, becoming later in the year head of the electrical department of the firm in Newcastle. Sir John joined the Central Electricity Board in 1934 as deputy chief engineer and was appointed chief engineer in 1944.

He was President of the Institution of Electrical Engineers in 1952. He had served on the Council of the Institution since 1943, was elected vice-president in 1946 and Faraday Lecturer in 1947. In 1948 Sir John was appointed a member of the Scientific Advisory Council set up to advise the Minister of Fuel and Power on new scientific knowledge or developments. In April, 1949, he led a delegation to the United States and Canada to examine and discuss the practices of selected electricity utility companies in generation, transmission and tariffs. Sir John was elected president of the British Electrical and Allied Industries Research Association in April last; he is a vice-president of the British National Committee of the World Power Conference and was president of this year's British Electrical Power Convention.

Electrically Heated Flats

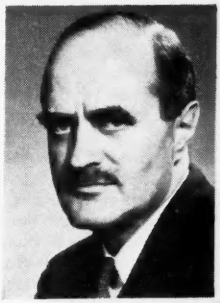
ELECTRICITY will provide the sole means of heating in the 860 Lambeth Borough Council flats on the Studley Estate, Stockwell, the first block of which was opened by Mr. Herbert Morrison on Saturday. Each living room is equipped with an Electroway 2 kW inset fire and each bedroom a 1 kW unit, all provided with guards conforming to the new safety regulations.

All the flats are provided with a Burco wash boiler as standard, though a washing machine can be substituted under a hire-purchase scheme. Every flat is equipped too for an electric cooker and refrigerator. A 1½ cu ft inset Electrolux refrigerator is supplied on hire for 2s a week and there is a choice of cookers. One model is available on hire for 9d a week with oven thermostat and "Simmerstat" on the boiling plate; another, one of the latest Belling models (with two boiling plates and a grill boiler), can be had on hire-purchase for 2s 8d a week for seven years with no deposit. Kettles and pans can also be hire-purchased. For water heating the tenant can have a "Dulec" under-draining-board unit, which incorporates two heating elements, one at the top constantly connected under thermostatic control to give immediately an ample supply of hot water for washing up, etc., the other manually controlled for giving the whole capacity of the cylinder for baths, etc. Apart from these facilities every flat is well provided with socket outlets.

To collect the electricity charges prepayment meters are normally provided, calibrated at 1d per kWh. The standing charges as well as hire-purchase payments are collected with the rents on behalf of the London Electricity Board. The electrical contractors for the scheme are the Phœnix Electrical Co. (London), Ltd.

Broadcasting Affairs

The I.E.E. Presidential Address



Mr. H. Bishop is Chief Engineer to the British Broadcasting Corporation

IN the main part of his inaugural address, delivered last week in London, the new President of the Institution of Electrical Engineers, Mr. Harold Bishop, C.B.E., B.Sc. (Eng.), dealt largely with the engineering developments of, and the problems involved in, sound and visual broadcasting, principally in this country but to some extent also abroad, since Sir Noel Ashbridge delivered his presidential address to the Institution in 1941.

The President said there had been a good deal of change in the years since 1941, both as to the new requirements for the home programme services, and developments in the international field. The importance of the latter was perhaps less obvious, but the requirements of international broadcasting did affect the home services because there was competition for frequencies and other facilities, and the results were not without influence in world affairs.

Whereas the application of standardization to commercial products worked through national organizations such as the British Standards Institution in this country, in broadcasting there was another aspect of standardization which had its own peculiar difficulties, the suppression of radio interference. In 1933 the Council of this Institution set up a study committee to consider the question, and in 1934 the International Special Committee on Radio Interference (C.I.S.P.R.) was set up jointly by the I.E.C. and the I.B.U. It provided a forum for discussion between the broadcaster and the manufacturers of radio equipment and of electrical equipment capable of causing interference. It had achieved some success in standardizing methods of measurement of electrical interference, which was a peculiarly elusive quantity to measure.

The problem of frequency allocations was troublesome in all wavebands and particularly in the low-, medium- and high-frequency bands—i.e., those between 150 kc/s and 25 Mc/s. These difficulties might be serious even in the v.h.f. bands which were coming more and more into use for sound broadcasting and television. It was thought only a few years ago that the range of transmission on these frequencies would be so limited—regardless of power—that interference between stations in different countries using the same or nearly the same frequency would be unimportant. This might not be the case.

Between 1929 and 1952 the number of stations increased by 281 per cent, while the bandwidth on which these stations must operate increased by only 20 per cent. In the Copenhagen plan, which came into operation in 1950, 243 low- and medium-frequency stations and synchronized groups were allocated frequencies, and the bands were full. After three years the number of stations and groups now working was 368 (a total of 762 individual stations), an increase of 50 per cent.

The number of broadcasting transmitters on medium and low frequencies in Europe had more than doubled since 1939, and the number of receivers in the world had increased threefold, and as the population of the world was about 2,400 million, there was a sound broadcasting receiver for every twelve persons.

The increase in the number and power of sound transmitting stations in Europe had caused a considerable rise in the level of interference from foreign stations, and this in turn had meant that the minimum field strength for reliable reception had increased. It had been impossible to cope with this situation, because new stations of power greater than a few kW were out of the question as there were no frequencies on which they could work, and there were technical limits to the extent to which it was economic to increase the power of

existing stations. As a result, therefore, the area and consequently the population able to obtain first-class reception of alternative sound broadcasting programmes had in recent years tended to decrease, in face of a still rising number of sound licences.

There was no chance of more medium or low frequencies becoming available for B.B.C. use; indeed they would be fortunate if a further deterioration could be avoided.

Bands had been internationally agreed for broadcasting in the v.h.f. (very-high frequency) and u.h.f. (ultra-high frequency) regions which extended from 30 Mc/s to 3,000 Mc/s. The band which it had been agreed internationally should be used for sound broadcasting extended from 87·5 Mc/s to 100 Mc/s, but in this country about half of this band had been allocated to services other than broadcasting and only 88 Mc/s to 95 Mc/s was available. The Government had now given permission in principle for a start to be made with the building of v.h.f. stations.

Television Service

Turning to television matters, Mr. Bishop said that since the war four transmitters of 100 kW e.r.p. (effective radiated power) had been erected in the Midlands, the North, Scotland and South Wales, and with the London transmitter at Alexandra Palace the five stations served 40 million people, a coverage figure of 80 per cent, which was substantially greater than had been achieved so far by any other country. The stations were permanently connected to London by cable or radio link provided by the Post Office. These links were always required at short notice, and mobile equipment was of course used. For links difficult from the propagation point of view, frequencies as low as 200 Mc/s were used. Normally, however, the frequencies were in the neighbourhood of 4,400 to 7,000 Mc/s. Survey teams had mapped out the routes of the links which would be required from all the likely sources of programme material in all parts of the country.

The B.B.C. hoped that it would be permitted to tackle two further problems. The first was the provision of an alternative service, and the second was the development of means whereby more programmes could be produced in centres away from London. The provision of an alternative service required for its attainment a second chain of television stations. It was not at all certain that frequencies would be made available to the Corporation for this second chain, but if they were it would be developed on the same lines as the first, i.e., by installing additional high-power transmitters at the existing stations to cover the main centres of population and then by providing low-power transmitters to fill in the gaps.

In his address Mr. Bishop also dealt with the recommendations of the Television Advisory Committee set up by the Postmaster General in 1952 (see *Electrical Review*, 17th July, 1953).

One of the serious problems was the cost of staffing television studios, control rooms and outside broadcast units, and it was in this direction that they looked for reductions in the cost of television operations. For example, in a television studio in which, say, a simple play was being produced, about 11 engineers and technicians were needed in the studio itself and nine others in the control and apparatus rooms. It was clear, therefore, that one way of reducing the overwhelming costs of television production was by the development of equipment which was automatic or semi-automatic in operation and which could be controlled remotely.

Compatible Colour System

Continuing, the President said the development of colour television was bound to follow the development of a successful monochrome system. It was shown by Sir Isaac Newton that white light could be produced by a mixture of coloured lights and that nearly all colours could be obtained from a mixture of three colours only. Broadly it could be said that in a compatible system the luminance or brightness components of the colour picture must be transmitted in the same bandwidth, on the same standards and on the same channel as would be used for a monochrome picture. If the chrominance or colour components were also transmitted in the same bandwidth, the system was usually described as *fully compatible*, but the advantage of a compatible system was not lost if these components were transmitted outside but adjoining the monochrome bandwidth. This would be possible only if sufficient adjacent-channel space were reserved for the purpose.

AGRICULTURAL DEVELOPMENT

Contractor-Board Conference at Leicester

LAST week, at the Bell Hotel, Leicester, the East Midlands Electricity Board and representative electrical contractors in the area held a conference on electricity in agricultural development. Mr. C. R. King, chairman of the Board, presided, and in his opening remarks explained that the object of the conference was to deal only with those farms which already had a supply of electricity. Rural development could be made to pay for itself and it was the Board's job to see that farmers used their supplies to the fullest advantage. At present only about half the farms in the country did so and this opened a vast field of development for contractors. The Board would sell agricultural electrical equipment to farmers but it preferred the contractors to do this job. Mr. King said he hoped that each contractor would allocate a man to go out into the rural areas and sell electricity to farmers. By using electricity intelligently a farmer could save a third of his labour cost and it was in this direction that the Board and the contractors could help him.

The next speaker was Mr. J. C. Gillott, agricultural officer of the Board, who said that electricity was the most important agent in speeding up production on farms. The average annual farm consumption was 3,000 kWh which represented, say, only a sterilizer. The figure should be more like 24,000 kWh. The only way to induce farmers to use more electricity was to go out and discuss their problems with them. This might seem an expensive remedy but was the only one and the essential factor was to approach the job not from the electrical but from the farming standpoint. The expense involved would pay handsome dividends in the long run.

Mr. C. A. Cameron-Brown, agricultural adviser to the British Electricity Authority, then said that electrical methods were only being applied where the Boards were doing their job in advising and helping the farmers. The challenge, however, should be met by the contractors. In the East Midlands Area, where 16,000 farms had a supply, contractors could get £4 million of farm work a year. The thing was not to ask the farmer what he wanted but to advise him and gain his trust. Service was just as important as the initial installation and whether the contracting firm was small or large there should be a specialist in farm work on the staff who knew what farm equipment was and what it did. Mr. Cameron-Brown advocated a " contract " for service and a regular inspection of equipment. This was not a new idea; he knew farmers in some areas who were pleased to pay up to £70 per annum for inspection of equipment.

After an informal luncheon, Mr. R. A. Bayetto, rural electrification officer, British Electrical Development Association, quoted an instance of a farmer who used 60,000 kWh a year and suggested that " high farming " and " high electrification " should go hand in hand. The purpose of electrification should mainly be to free labour to increase food production and because it lent itself to automatic operation electricity could be used to replace other methods of providing heat, light and power. On an average farm of 60–70 acres it

On the platform at the opening of the conference *(left to right)*: **Messrs. L. L. Perkins (chairman, East Midlands Electricity Consultative Council) John Mould (deputy chairman, East Midlands Electricity Board), C. R. King (chairman, E.M.E.B.), C. A. Cameron-Brown(agricultural adviser, B.E.A.) and J. C. Gillott (section head, rural development, E.M.E.B.)**

would be possible to have a connected load of 57 kW with an after diversity demand of 22 kW and anything from 20,000 to 30,000 kWh consumption per year. Such a farm would have up to £3,000 worth of electro-agricultural equipment. Mr. Bayetto suggested ways in which the sale of equipment and electricity could be increased on farms and said that co-operation between contractors and the Board would be a good first step. There should also be liaison between the contractors' representative and the National Agricultural Advisory Service, the National Farmers' Union, the Young Farmers' Clubs and the Women's Institutes.

Farm wiring installations were discussed by an electrical contractor, Mr. J. P. Inglis, who is the E.C.A. nominee on the E.D.A. Rural Electrification Committee. He said that the first requirement for this sort of work was enthusiasm. Since in most cases the contractor would not be given a working specification the first consideration must be the safety of the installation. The speaker advocated all-insulated wiring systems wherever possible. With regard to earthing it should not be assumed the nearest water pipe was good enough. He dealt in some detail with lighting cowsheds and barns, the importance of keeping cables away from rat-runs, and the choice of suitable drives for machinery.

The proceedings were wound up by Mr. N. F. Marsh, chief commercial officer of the Board, who pointed out that the Board's policy was to continue its existing contracting work but not to extend it. He referred to the work done by the joint committee of contractors and the Board's representatives which was formed in 1949 and had promoted various incentives to both consumers and contractors. Mr. Marsh emphasized that wherever possible advance information regarding mains extensions would be passed on to this committee. He concluded by saying that if as a result of this conference some contractors felt it worth while to take on staff solely for rural work he hoped they would let the Board know of such a development.

Improvements in Lighting

At the opening meeting of the new session of the Illuminating Engineering Society held at the Royal Institution, London, on 13th October, Mr. W. R. Stevens was inducted as president. For the title of his address he chose the Society's new motto "Passim Spargere Lucem," meaning "To spread a light everywhere." He said there were three main springs from which new ideas on lighting arose: the study of light sources and the production of new ones; the study of seeing and the properties of the eye; and the study of lighting installation design.

Interest in artificial lighting usually followed the introduction of new light sources and in recent years application engineers had never fully worked out one source before another appeared. We now had the tubular fluorescent lamp, the full possibilities of which had not yet been exploited, and we might ask what further revolutions in lamp design were likely. The position was less hopeful than twenty years ago. Electroluminescence might be the answer, but it was doubtful.

In regard to research on seeing, Mr. Stevens said it was unlikely to shatter our present notions about lighting or lead to radically new methods. It could, however, put our ideas straight, make practice definite instead of vague and make the average lighting engineer do better work.

Lighting practice was still a matter of "cut and try." We had a few useful rules for designing and installing and a few rules which seemed to have no function in experiment or commonsense. For the most part we designed by experience; sometimes, however, experience degenerated into routine and this was to be avoided. Greater use of imagination was needed in everyday jobs and the application engineer must continue to find better ways of doing his job.

Mr. Stevens concluded by saying that many people had inefficient, unattractive and often archaic lighting and it was up to the Society to show them how much better it could be done. The best course was probably to expose the user to good lighting rather than to good verbiage. There was, of course, also the matter of the education of the lighting engineer.

Selling Electric Cookers

A Call for a Strenuous Effort

By JOAN WHITGIFT

and

C. D. BRAITHWAITE*

WHAT'S wrong with the electric cooker market? Why, when it is proved that electricity for cooking is cheaper, cleaner and more efficient, are sales such that only one new cooker in every four is electric?

In 1952 alone, with a systematic drive, and in addition to ordinary sales, the gas industry replaced 370,000 obsolete cookers with gas cookers of modern design. That figure represents more than double the total number of electric cookers connected in the home market in the same year.

What's wrong? How does the gas industry, with everything against it, succeed in making such progress? Where does its sales policy differ from ours? What is it doing that we neglect? It is high time the electrical industry asked some searching questions of itself, and that we made dispassionate criticism of our merchandising.

In an article of this kind it is impossible to avoid stating obvious and generally accepted facts; there is nothing new in methods of merchandising. Our competitors have not hit upon some revolutionary means of stimulating business. The recipe for selling is well known, has been set down many times, and is always the same. Nevertheless, since the obvious is of primary importance when one is asking heart-searching questions, it would be just as well to list the ingredients of our recipe.

They are advertising and editorial publicity; window displays, showcards, posters; films and slides; direct mailing; lectures and demonstrations; exhibitions; showrooms; canvassing; and indirect selling through service engineers, meter readers, etc.

If we look at that list we can say that the industry is employing all those methods —and there, perhaps, is our first fault. To say that a cake will be a success because we have thrown in all the ingredients is a mistake from the start. It is so easy to tell ourselves that we have done all we can, to be complacent, to feel assured that no additional effort can possibly have any better effect—so easy, and quite fatal. Each contribution to increased drive must be backed by enthusiasm, by aggressive high-lighting, and by a complete conviction of the value to the public of what is being sold. An advertisement is useless unless it is sincere; a window display or a poster is valueless unless every passer-by feels that the message is directed to him; a salesman must believe it is of paramount importance that the customer buys because she is in vital need of what he has to sell.

Salesmanship is something that is very alive. Never for an instant can we hoodwink ourselves into believing that a bare statement of the facts will stimulate sales. Whether it is direct selling between salesman and customer, or through one of the indirect media listed above, always it must have as its basis genuine enthusiasm, stimulating enthusiasm. It is perhaps not surprising that salesmanship has atrophied from years of disuse. It has been difficult to maintain enthusiasm through the post-war years of shortage. Shortage of power, shortage of materials—no wonder we have been short of enthusiasm.

There are signs, however, that the era of shortage is over, and we are now only short of orders. Happily, there are also signs that the electrical industry is waking up, and realizing that part of its job is creating a demand for its products. Recent national Press advertising by E.D.A. and

* Respectively Chief Housecraft Adviser and Sales Manager, Domestic Cooking Department, Simplex Electric Co., Ltd.

individual manufacturers, and Area Boards, has done much to stimulate the demand for electrical equipment and a noticeable recent improvement in sales has resulted. A larger advertising campaign would doubtless improve them still further, but the extensive cost makes it almost prohibitive and other methods, simpler, cheaper, and equally effective, are available.

The best propaganda, the most important and valuable asset that this industry possesses, lies with the women on its sales staff. The bulk of our time, and nearly the whole of our resources, is spent in persuading women to use domestic equipment. It is to the woman that our electric cookers must appeal; it is to the woman that we are speaking when we say that electricity is cleaner, cheaper, quicker—that electric cooking means better food and better health for her family. For this reason the role of the housecraft adviser in the sales team figures with increasing prominence. She is a valuable adviser to the customer, but even more valuable in advising on sales propaganda of every sort.

Press Publicity

Editorial publicity is of enormous value, but editors cannot afford to give space to anything but thoroughly readable and interesting news. The whole staff should co-operate in an effort to get news to press while it is still "hot." Notable successes gained by the electric cooker industry, illustrations of well-planned kitchens, or local functions with an electrical slant, may all have topical interest in their appropriate sections of the Press. Photographs of notable people are usually acceptable, always provided they are linked with items of topical electrical interest.

Demonstrations form an essential part of the sales scheme, and are an important part of the housecraft adviser's work. In the first place it is essential to get the right people to the demonstration; local advertising, posters, and direct invitations are standard methods, but they must be as personal as possible in their approach to the housewife. The demonstration must be carried out in such a way as to maintain interest in the cooker throughout. In all probability the audience will be primarily interested in the recipes, and these must be chosen carefully to show off the cooker, and not just the recipe and the cook. The demonstrator must remember, throughout, that she is there to sell electric cooking.

Service calls are an important sales aid. The finest promoter of sales is a satisfied user, and every user herself will, in time, be a "prospect" for a replacement. It is vital that the owner of every cooker shall be versed in its use, for the harm that can be done by one dissatisfied user can take considerable time and effort to eradicate. It is perhaps not over-stating the case to say that one dissatisfied user can offset the value of twenty satisfied ones.

Confidence is perhaps the essence of salesmanship, and the salesman must, of course, have complete confidence in the equipment he is selling. All the expenditure on advertising, displays, demonstrations, and the other methods of tempting the public into the showroom, is nullified if the staff are not sufficiently confident to convince the potential user of the merits of the articles which they are selling. Few people are prepared to part with a sum of money without consideration, and they need to be convinced that the investment will save money, and will also give added convenience, comfort, cleanliness, efficiency and speed. Unless the entire staff are convinced in their own minds, there will be no success in convincing the consumer.

There are still many people employed in the actual sale of electric cookers who do not use them in their own homes. It is appreciated that circumstances sometimes render this inevitable, at any rate for a short period; nevertheless it is difficult to urge a course of action on a potential buyer if one has adopted a precisely opposite course one's-self.

It is the manufacturer's job to ensure that showroom staffs know the sales features of their products and up-to-date developments. This may be done either by routine calls of sales representatives, or by meetings of showroom staffs to which manufacturers are invited. As proof of the keenness of many sales staffs, such meetings have been held outside working hours on a voluntary basis, and attendances have been very good indeed. It seems, therefore, that provided staff is given the opportunity of acquiring the necessary knowledge, it is only too eager to do so. Tape recordings and slides have also recently shown success at staff meetings.

Canvassing is a word that no sales staff enjoys, mostly because of the suggestion

An effective cooker window display
(London Electricity Board)

of knocking at door after door. A tired, bored or diffident canvasser never makes a good contact, and leaves as bad an impression as will indifferent showroom staff. Indeed, it is questionable whether canvassing is worth the results, particularly with large equipment such as cookers. Some preliminary introduction is not only pleasanter for the salesman, but is likely to make the prospective user more receptive.

More subtle methods of canvassing are already in use. One is the use of the mobile showrooms which are being employed in certain areas. It is surprising how, if you bring a showroom to a woman's front door, she cannot resist visiting it, and will not wait to be invited to enter. In one area recently, a mobile showroom was taken on a new housing estate, and the success of this venture was so complete that 90 per cent of the people who entered the showroom signed up for electric cookers. In the same area good results have been achieved by taking the showroom to local shows and exhibitions where an audience is assured, and organizers of such functions now frequently request its attendance.

Manufacturers of electric cookers are perhaps more sensitive than ever towards the needs of the user and the retailer. Thanks to the adverse propaganda of the past few years, the day has gone when a woman regarded the installation of an electric cooker as an ideal. To-day, housewives may even regard electric cooking with a measure of suspicion, and though many may still be aware of its advantages on the score of cleanliness it is certain that comparatively few have yet realized that it also combines the advantage of cheapness. In other words, we have to start all over again and re-educate them to the stage which had been reached in 1939.

The gas industry is the first to admit that the electric cooker has improved in design since 1945, though according to its Press (*Gas Service*, Dec., 1952) "the considerable technical improvement in the electric cooker came too late." This is, of course, nonsense, and it is up to us to disprove the suggestion that we have "missed the boat." It is here that manufacturers have a vital part to play. The recession through which we have just passed has had the tendency to delay the advent of new designs, but further new cookers are now appearing, and will continue to do so in increasing numbers if the upward trend in business can be maintained. The electric cooker industry has the ability to design and ample capacity to produce for an increased demand.

Gas Industry's Activity

Fierce competition lies ahead. Competitors will resort to any ruse that arrests the attention of consumers, and will try to win them away with any sales tricks they can find. It is interesting to see that gas and solid fuel are already increasing their efforts in an attempt to counter our competition. One Gas Board has a fleet of radio linked mobile demonstration vans. Information is obtained from the central office while the prospective purchaser is still there, an order is radio-ed to the delivery office, and it is their boast that a gas cooker installation will already have been started by the time she gets back to her home. There is no doubt that for every move we make our gas and solid fuel rivals will also make an additional effort. It has suddenly become a bitter fight with our competitors making a desperate stand—the electrical industry cannot afford to regard the future with complacency, and must fight back now.

Salesmanship in the electrical industry has always been based on a steady

confidence in the product. Bitterness need not necessarily be met with bitterness, which leads to ugly and unpleasant situations, bewildering to the consumer and undignified for the sales staff. The counter to any competitive selling is an absolute assurance that one's own product is better, combined with the keen desire to proclaim the fact at every opportunity. Salesmanship is just as necessary when persuading the housewife to hire or hire-purchase an electric cooker as when endeavouring to sell for cash, and throughout this article the term "sell" means selling the idea and the service of electric cooking.

It is admitted by all within our industry that our objective must be to increase domestic cooker sales and all forces within the industry must be marshalled to this end. There is an important part for the contractor and the electrical retailer to play, and the market is very much wider than the obvious one of the new housing estate. The domestic cooker is an essential builder of the right type of load; without its aid unit charges cannot be held at their present level, either for industrial or domestic use. At the same time, it is as well to set ourselves a clear target at which to aim.

The gas industry has scored spectacular success in the field of new housing. To quote figures from its own Press for the years 1951–52:—Area "A": 18,000 dwellings completed, and 85 per cent employ gas for cooking. Area "B": 12,206 houses completed, and 70·8 per cent employ gas for cooking. Area "C": 18,600 houses completed, and 85 per cent employ gas for cooking.

If in the years 1953–54 the electrical industry could claim that in three similar areas 50 per cent of the cookers connected had been electric we could indeed feel that substantial progress had been made. At a conservative estimate this would mean an additional 65,000 kW of connected load, to say nothing of the stimulus created for the manufacturers. Earlier in this article it was mentioned that the gas industry is replacing obsolete cookers at the rate of 370,000 per year.

We cannot hope to replace obsolete electric cookers at this rate because the number of electric cookers on the mains before, say, 1935 would not support a replacement market of this magnitude. After the war, however, it was estimated by Government sources that a replacement market existed of 200,000 electric cookers per year. Even if it is felt that this figure is an optimistic one, given a sufficiently aggressive sales approach, there is no reason why it should not be possible for the electric cooker to capture 50 per cent of the gas cooker replacement market.

We cannot afford to ignore any section of our own industry that can further the cause of electric cooking. The market exists, the right products exist, our prices are competitive. If selling weapons are sharpened, the future for our industry is bright.

Southend Line Electrification

A PROGRAMME of preliminary engineering works costing £250,000 for the coming electrification of the lines from Fenchurch Street to Southend-on-Sea (Central), Shoeburyness and Tilbury was announced on Monday last.

At Fenchurch Street station platforms 1 and 2 will be extended to accommodate full-length Southend trains. The up platform at Stepney East will be lengthened and the curves through the station eased to allow faster running. Track and signalling alterations to improve the working of peak hour trains through Barking will include conversion of the up-through line for two-way working. At Leigh-on-Sea a new up line and up platform will be built, and the existing up line converted for two-way working so that trains can be reversed without blocking the main lines: at the same time, the station lighting will be modernized. Electric lighting will be provided at Westcliff-on-Sea, where minor alterations to the platforms have already been completed. Platforms 3 to 6 at Southend Central will be reconstructed to take longer trains. New intermediate signals will be provided on the up line between Benfleet and Bowers Gifford and at Upminster Bridge and on the down line at Dagenham Heathway. On the Tilbury line, to improve working, running loops will be constructed on the up side between Purfleet Rifle Range and Rainham and on the down side between Thurrock Junction and Grays.

Some of these works have already been started. When completed, they will ease conditions during major electrification works and will also permit improvements to the present steam services.

Factory Electrical Installation

New Ransome & Marles Works at Annfield Plain

THE new branch factory of the Ransome & Marles Bearing Co., Ltd., which has been built by North Eastern Trading Estates, Ltd., at Annfield Plain, Co. Durham, was opened recently by Mr. A. R. W. Low, C.B.E., D.S.O., M.P., Parliamentary Secretary to the Ministry of Supply. This factory, which has been designed to permit multiple expansion, covers an area of 3·34 acres and is devoted entirely to the manufacture of precision bearings.

The works layout has been arranged so as to facilitate handling from the reception of the raw material to the outgoing finished product, particular attention having been paid to straight line flow of the product, continuous movement, and consequently, a high man-hour efficiency. The most up-to-date types of high-precision, general and special purpose machines, and also inspection equipment, have been installed, together with heat treatment furnaces for hardening the bearing rings.

The laboratory is fully equipped to carry out all necessary tests of raw materials and to control the heat treatment processes. Apart from the normal inspecting and viewing rooms, provision has been made for travelling inspectors and viewers to make progressive operational checks adjacent to the production line. There is also a standards room which is maintained at a constant temperature.

Throughout the works the heating and ventilating system ensures comfort all the year round, but in addition, in the finishing departments, ventilation air is filtered to eliminate dust which might otherwise find its way into the finished product.

Works Substation

The factory is almost entirely electrically operated and a 20 kV supply is provided by the North Eastern Electricity Board to the works substation which accommodates the 20 kV switchgear, transforming and rectifying equipment and l.v. switchgear. To save ground space and to facilitate cable entry into the factory at high level, the substation, which is a separate structure at one end of the main building, is of "double-deck" construction. The h.v. switchgear and transformers are on the ground floor and the l.v. switchgear and rectifier are on the first floor. This simplifies the cabling arrangements and is readily extensible if the factory is developed.

The immediate demand on the electrical system is about 1,000 kVA with a possible increase to 1,200 kVA. In anticipation of line voltage fluctuations the lighting and furnace loads are on a separate 400 kVA transformer with on-load automatic tap-changing gear to maintain a voltage of $\pm 2\frac{1}{2}$ per cent of normal. The main machine load is carried by a 1,000 kVA transformer. Each transformer feeds a separate set of l.v. busbars but provision is made for bus coupling if either transformer is out of commission. The transformers are fed by a common h.v. switch and d.c. supplies for cranes and a few special machine tools are supplied from a 175 kW glass bulb mercury arc rectifier.

Distribution System

Extensive use has been made of aluminium sheathed cables and distribution from the main l.v. switchboard into the factory is at roof truss level to a number of local switch-fuse boards some of which are placed on platforms to conserve space for machine tools. In general the wiring from the distribution boards is carried out in v.r.i. but mineral insulated copper clad cable has been used where the cables are built into the floor or exposed to arduous conditions such as immersion in cutting oils, etc., and for the fire alarm system.

An emergency generating set provides a supply for essential lighting, internal communications and the hardening shop plant in the event of a power failure. This equipment starts up automatically immediately the supply fails.

A variety of sources have been installed for lighting the factory. In the auto shop and hardening shop where a mounting height of 25ft is possible high wattage, high

brightness lamps have been used and to provide adequate light at reasonable cost and reasonable colour a mixed tungsten/mercury vapour scheme has been installed. With lamps 2ft apart in standard concentrating reflectors, there is adequate mixing of light at the working plane.

In the grindery and assembly shop where a higher level of illumination is required and the mounting height is much lower hot cathode instant start fluorescent lamps are used. In general these are fixed to continuous lengths of steel trunking designed to give a maximum distance between supports. This is usually about 15ft but in some cases 27ft has been spanned. The same trunking also accommodates the machine tool wiring thereby effecting a considerable saving in installation costs. In the stores, office block and canteen tungsten lighting has been used.

There is a comprehensive system of internal communications, the nerve centre of which is the telephone room, and the whole is under the control of the telephone operator. Complex as the system may appear, it is extremely simple to operate. The main internal communication is carried out by an automatic telephone system, but this is supplemented by a loudspeaker equipment for putting out time signals, fire alarms, special announcements, and music either from radio or gramophone records. The time signals are under the control of a master impulse clock which also controls the clocks and time recorders throughout the factory. There is a separate amplifier equipment in the canteen which may be used independently for instructional purposes or for concerts.

The time signal and fire alarms are sent out automatically over the whole system but the operator can select those sections of the factory to which music or speech is to be transmitted. A system of priority is arranged to ensure that time signals and fire alarms are sent out in preference to other programmes, but in special circumstances time signal priority may be cancelled by the operator.

In addition there is a system of Post Office telephones for external communications and a completely independent conventional fire alarm system giving a warning and indication in the gatehouse as to the part of the factory affected.

In all, the installation uses more than 45 miles of cable and 10 miles of conduit and trunking. There are over 1,250 lamps representing a total lighting load of 220 kW and more than 2,500 h.p. of motors for driving machine tools are installed.

The architect for the new factory is Mr. J. H. Happer, M.A., F.R.I.B.A., A.M.T.P.I., while the consulting engineers for the electrical work are R. W. Gregory & Partners. The main electrical contractors are James Scott & Co. (Electrical Engineers), Ltd. The chief suppliers of equipment are:—A. Reyrolle & Co., Ltd., h.v. switchgear; Metropolitan-Vickers Electrical Co., Ltd., l.v. switchgear; C. A. Parsons & Co., Ltd., power transformers; Hackbridge & Hewittic Electrical Co., Ltd., power rectifier; British Insulated Callender's Cables, Ltd., Johnson & Phillips, Ltd., General Electric Co., Ltd., and Pyrotenax, Ltd., cables; Artic Fuse Co., Ltd., distribution fuseboards; Standard Telephones & Cables, Ltd., public address and internal communications equipment; Ruston & Hornsby, Ltd., emergency generator; G.E.C., Metropolitan-Vickers, and Hailwood & Ackroyd, Ltd., lighting fittings; and G.E.C., steel trunking.

Domestic Heating Appliances

AS the subject of this year's Melchett Lecture, presented before the Institute of Fuel on 7th October, Mr. Harold Hartley (chairman, Radiation, Ltd.) chose "The Domestic Appliance Industry and Fuel Usage in Great Britain."

Starting with figures relating to direct and indirect methods of using coal in homes (one-third of the total mined), he discussed the efficacy of appliances for space heating, cooking and water heating. A section on design and manufacture was followed by one on domestic fuel problems, in which it was pointed out that the desire to raise comfort standards would counteract exhortations to economy.

Since two-thirds of householders were tenants there was, he said, a demand for self-contained equipment which would not become a landlord's fixture. It was more difficult to design appliances for solid fuel than for electricity or gas. The coal industry should arrange for the testing of appliances and should co-operate with manufacturers to ensure that only good equipment was marketed.

COMMERCE and INDUSTRY

Engineering Wage Claim Rejected

Electric Blanket Action

AT a meeting of representatives of the Engineering and Allied Employers' National Federation and the Confederation of Shipbuilding and Engineering Unions on Wednesday last week the employers rejected the Confederation's claim for an increase of 15 per cent in the wages of the members of its constituent unions.

Sir Percy Mills, president of the Employers' Federation, expressed his members' "dismay" at receiving a further claim within five months of the granting of an increase of 7s 4d a week in November last. He said that the claim was made at a time when prices were no longer generally increasing and when some effort should be made to achieve stability.

The director of the Federation, Mr. B. Macarty, said that it was untrue that wages had not kept pace with the cost of living. Between January, 1948, and July last the retail price index had risen by 35·6 per cent but the average weekly earnings of adult males in the engineering industry had increased by 47 or 48 per cent. There had been declines in the receipt of orders and in export trade during the past two years. It was now essential to quote firm contract prices. Wage increases could not be met out of profits, which in any case were showing a downward trend. Any advance in wages would necessitate price increases which would impair our ability to compete in export markets at a time when increased exports were essential.

Mr. J. Tanner, president of the Amalgamated Engineering Union, replied to the points made by the Federation's speakers and it was agreed that the employers' reply should be considered by the unions before further contact was made with the employers.

Electricity Supply Staff Salaries

A claim for increased salaries for all employees in the electricity supply industry covered by the National Joint Council (Administrative and Clerical Grades) was submitted at a meeting of the Council on 15th September. The matter was referred to the Negotiating Committee. The claim is based on the worsened position of the employees concerned because their salaries have not kept pace with the rising cost of living nor with the salaries of those in comparable positions.

Foundry Regulations

The Minister of Labour and National Service has made the Iron and Steel Foundries Regulations, 1953 (S.I. 1953 No. 1464, obtainable from H.M. Stationery Office, price 4d net), which make provision for the safety, health and welfare of workers employed in iron and steel foundries. The Regulations contain requirements as to gangways, suppression of dust and fumes, protective equipment, bathing facilities, clothing accommodation and the arrangement and storage of foundry equipment, tools, etc. They come into operation on 1st January next, with the exception of the requirements relating to the suppression of dust and fumes, bathing facilities and clothing accommodation, which operate from 1st January, 1956.

Private Trading in Magnesium

The Minister of Materials has decided after consultation with the industry that private trading in magnesium shall be restored on 1st January, 1954. As from that date the Ministry of Materials will cease to trade in magnesium and the Magnesium Distribution Order, 1951, will be revoked. Private importation will be permitted and applications for import licences should be addressed to the Import Licensing Branch, Board of Trade.

F.A.S.S. Luncheon

The annual luncheon of the Federation of Associations of Specialists and Sub-Contractors is to be held on 25th November at the Savoy Hotel, London. Sir David Eccles, the Minister of Works, will be the principal guest.

Plastic Cable Makers' Association

Eighteen firms have combined to form an Association of Plastic Cable Makers with a view to promoting the interests of the industry and establishing standards of quality. The chairman of the new Association is Mr. L. S. Hargreaves, of Aerialite, Ltd., and the secretaries are James, Edwards & Co., 381, Salisbury House, London Wall, E.C.2.

A.M.E.E. Meeting

At a recent meeting of the Nos. 9 and 12 Centres of the Association of Managerial Electrical Executive at Southport the programme comprised a lecture by Dr. A. Roberts, head of the Department of Industrial Administration, Manchester University, a business meeting and a dinner.

At the business meeting the chairman of the Centres, Mr. P. H. Flatt, welcomed Mr. A.

At the A.M.E.E. Southport meeting: Messrs. J. W. Thomas, P. H. Flatt, A. Kelso, P. Clegg (Centre hon. sec.) and Dr. A. Roberts

Kelso, president, and Mr. J. W. Thomas, secretary of the A.M.E.E., who explained at length the protracted negotiations for managerial salary scales (the "fourth leg") in the electricity supply industry. Mr. Thomas also spoke of successful negotiations with Electricity Boards on individual compensation cases and the application of the interim increases.

The dinner, at the Scarisbrick Hotel, was well attended by senior engineers and managers from the North Western and Merseyside & North Wales Electricity Boards and B.E.A. Divisions.

Domestic Science Teachers' Conference

A conference for teachers was held at the Surrey Sub-Area premises at Burford of the South Eastern Electricity Board on 3rd October. The purpose of the conference, which was attended by about sixty domestic science teachers from Surrey and adjoining counties, was to encourage teachers to make greater use of electrical equipment installed by "Seeboard" in schools for instructional purposes. A talk by Mr. S. F. Osborne, Surrey commercial officer, on the Board's services in schools was followed by a discussion. After lunch there was a demonstration of French cooking by Mrs. M. Patten, the B.B.C. television cook. This was followed by a discussion and later a visit was paid to the Board's all-electric kitchen at the Burford premises.

Electric Blanket Claim Fails

At Clerkenwell County Court last week Mr. and Mrs. Daniel Dillon, East Ham, claimed £30 12s damages for negligence against the manufacturers of an electric blanket, Permaheat, Ltd., Manchester. Mr. Dillon said that the blanket worked well for 18 months. Then it went wrong and was sent back to defendants for repair. The first time they used it after its return the blanket caught fire and afterwards was "a charred mass of wire." He denied that he had folded the blanket.

Mrs. Dillon said that during the night she went to switch the blanket off. As she did so she was burnt on the arm. She threw the bed-clothes off and the blanket burst into flames. She also denied folding the blanket.

Mr. T. B. Jones, managing director of the defendant company, said that they produced about 50,000 electric blankets a year. He showed the Judge an electric blanket similar to the one which plaintiffs had and explained how it worked. He described in detail how the repair to the blanket was carried out before it was returned to plaintiffs. He said it was on a test bench for more than an hour. It was impossible for the blanket to attain "a scorching temperature" unless it was folded. He thought Mrs. Dillon must have inadvertently folded the blanket. Notices were sent out with the blankets stating that they should not be folded. The blanket would not burst into flames; it would only smoulder. His company had for years been working on the problem of obviating damage to electric blankets through folding. The charred remains of the blanket which plaintiffs sent back showed that the thermostats were working correctly and the temperature could not have been exceeded through their failure. Even if they did fail, it would be uncomfortable but not dangerous.

Summing up, Judge Done said that it was not sufficient for the plaintiffs to say that the first time they used the blanket after it was repaired it set the bed on fire. That did not necessarily show any failure on the part of defendants to carry out repairs or that the blanket was not safe to use. Defendants had a well-established business and employed specialists in that type of work. The Judge was satisfied that the only way the blanket could have caught fire was by folding and that did not show any failure on the part of defendants. The action was dismissed.

F.B.I. Export Sales Conference

Attention will be directed to an urgent national problem by the F.B.I. Export Sales Conference to be held at Buxton on 30th October and 1st November. Practical measures to increase export sales will be discussed at the conference, the opening speeches at which will be given by Sir Harry Pilkington, president of the Federation, and Sir William Rootes, chairman of the Dollar Exports Council.

Sir Harry said at the recent annual meeting of the Southern Region of the Federation that they had tried to collect some 150 people of experience, mostly export sales managers, representatives of types of trade, of consumer and capital goods, of large, medium and small

firms, of those established in different parts of this country, and of those known to have connections with the several parts of the world. They had also invited a few outside specialists, such as merchants, bankers and export credit experts. There would be five discussion groups dealing with the following subjects:—Discovery of opportunity; organizing for exports; relations between exporter and importer; the export sales force; and the creation of opportunity.

W. J. Furse Diamond Jubilee

Tributes were paid to the late Mr. W. J. Furse, founder of the Nottingham company of W. J. Furse & Co., Ltd., by speakers at the dinner held at the Welbeck Hotel, Nottingham, on 3rd October, to mark the diamond jubilee of the company. All the 115 present had over fifteen years' service with the company, coming from the Nottingham, London, Manchester, Bristol and Derby branches. Mr. R. B. Lawford, secretary of the company, said the company's sixty years of progress was the result of concentrated hard work, foresight, planning and effort on the part of the present directors. He referred to the business creed laid down by the founder, and still observed by his sons, which was in no small measure responsible for the success of the organization, and mentioned the fifty years of public work done by the founder. Mr. S. J. Furse, managing director and son of the founder, expressed appreciation of the work done by Mr. Lawford, who had been secretary of the company for twenty-six years. Present also were Mr. W. F. Furse, chairman of the company, and Mr. H. J. Furse, director, both sons of the founder.

British Trade Fair in Baghdad

Sir Norman Kipping, Director-General of the Federation of British Industries, speaking at the annual meeting of the F.B.I. North Midland Region at Nottingham on 7th October, announced that the British and Iraqi Governments had given their blessing to a proposal of the Federation to organize a British Trade Fair to be held in Baghdad in the autumn of 1954.

Rapid developments are now taking place in Iraq as a result of the agreement between the Iraqi Government and the oil companies, which will increase the Iraqi Budget by between £40 and £50 million a year. While the greater part of this money will go to the financing of large capital projects, such as flood escapes, dams, hydro-electric installations, bridges and roads, considerable sums will also go into consumer spending. The main purpose of the British Trade Fair will be to show what British industry has to offer the peoples of Iraq and other Middle East countries, not only equipment for the capital development projects now under way or being planned but also consumer goods. A preliminary survey has already been carried out, as a result of which it has been decided to stage the Fair towards the end of October or early November, 1954.

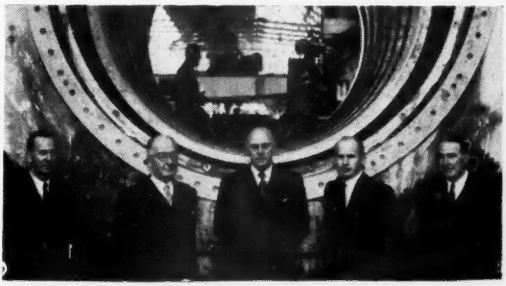
Power Convention Papers

The papers presented to the 1953 British Electrical Power Convention have now been reprinted with the discussions, and distributed. There are a few copies remaining of the paper entitled "Electricity and National Prosperity," by Col. B. H. Leeson, which may be obtained by application to the secretary, B.E.P.C., 16, Stratford Place, London, W.1, at a cost of 5s, plus postage. It is hoped that the Proceedings of the Convention will be published by the end of October. Those requiring copies of this publication are asked to send their orders to the above address.

Australian Visitors at Rugby

The Hon. J. A. Dimmitt, Agent-General for Western Australia, accompanied by Mr. C. R. Gibson, official secretary, Agent-General's Office, and Mr. H. Gardner, inspecting engineer, on 5th October, visited the Rugby Works of the British Thomson-Houston Co., Ltd., where the manufacture of electrical power equipment for eighteen diesel-electric shunting locomotives for the Western Australian Government Railways is nearing completion. On arrival at Rugby Works, Mr. Dimmitt was welcomed by Mr. K. R. Hopkirk, director and chief mechanical engineer, with Mr. E. T. Hippisley, manager, Traction Department. After a tour in the morning of the heavy plant

Western Australian Government officials at the B.T.H. Works
Left to right: Mr. J. H. Cansdale (deputy sales manager, B.T.H. Traction Department), the Hon. J. A. Dimmitt (Agent-General for Western Australia), Mr. C. R. Gibson (official secretary, Agent-General's Office), Mr. H. Gardner (inspecting engineer), and Mr. J. S. Borrington (superintendent, B.T.H. turbine factory), in front of the stator of a 60 MW hydrogen-cooled alternator for Meaford power station



factories and other departments at Rugby, Mr. Dimmitt and his party travelled to the works of the Clayton Equipment Co., which is manufacturing the mechanical parts of the locomotives, and saw the second completed locomotive and parts of several others under construction. The first locomotive has already been shipped to Australia.

A.S.E.E. Ladies' Night

The Association of Supervising Electrical Engineers is to revive the ladies' night which will be held at the Trocadero Restaurant, Shaftesbury Avenue, London, W.1, on 5th December. It will take the form of a dinner-dance and cabaret. Tickets (members and their ladies 35s each, and non-members and their guests £2 2s each) will soon be available on application to the general secretary of the Association, 54, Station Road, New Barnet, Herts.

Educational

An advanced course on power system plant will begin at the Heriot-Watt College, Edinburgh, on seven successive Saturday mornings, commencing on 24th October. The fee is £2 2s and particulars can be obtained from the secretary of the College, Chamber Street, Edinburgh, 1.

E.A.W. Annual Conference

The twenty-ninth annual conference of the Electrical Association for Women will be held at Torquay from 17th to 20th May next year.

North East Electrical Club

The first sessional meeting of the newly formed North East Electrical Club was held at the Royal Turk's Head Hotel, Newcastle-upon-Tyne, on Tuesday last, when Mr. H. H. Mullens delivered his presidential address.

Prices of Materials

In the accompanying table we give the basis prices of the more important materials used in the electrical industry. The figures are those quoted on Monday last.

ALUMINIUM Ingots	ton £150 0s 0d
COPPER, H.C. Electro	ton £230 5s 0d
Fire Refined 99·70 per cent	ton £229 0s 0d
Fire Refined 99·50 per cent	ton £228 0s 0d
COPPER Tubes	lb 2s 3½d
Sheet	ton £291 0s 0d
H.C. wire and strip	ton £264 5s 0d
LEAD, English	ton £89 5s 0d
Foreign	ton £88 0s 0d
MERCURY	flask £64 15s 0d
TIN	ton £595 0s 0d
ZINC, G.O.B. Foreign	ton £70 0s 0d
Electrolytic	ton £71 5s 0d
BRASS Tubes	lb 1s 10¾d
Sheet	ton £233 15s 0d
Wire	lb 2s 5⅝d
PHOSPHOR BRONZE Wire	lb 3s 8¼d
RUBBER, No. 1 R.S.S. spot	lb 17½–17¾d

Trade Announcements

We are informed that the **Tannoy Group** of companies has formed a new company, Tannoy (Canada), Ltd., with headquarters in Toronto. The resident executive in charge of this project is Mr. F. A. Towler, who was for many years sales manager in London.

E.F. Electric, Ltd., Willow Lane, Watford, referring to a notice which appeared in our issue of 2nd October, asks us to clarify its statement by saying that it is distributing its products direct to the *wholesale* trade.

H. Fisher (Oldham), Ltd., has recently opened new West End offices and showrooms at Lloyd House, 44, Bryanston Street, London, W.1 (telephone : Paddington 4077).

Catalogues and Lists

Foster Transformers, Ltd., South Wimbledon, London, S.W.19.—Illustrated brochure of "Foster" voltage regulating equipment (FM.14).

The Telegraph Construction & Maintenance Co., Ltd., Telcon Works, Greenwich, London, S.E.10.—26-page illustrated technical publication on "Telcon" aluminium power cables (AC/1) and 34-page booklet entitled "Telcon Plastics, Their End Uses and Characteristics" (TPD/1).

Line Equipment, Ltd., 32, Queen Victoria Street, London, E.C.4.—Descriptive leaflet illustrating the "L.E.L." transformer excess load indicator.

British Driver Harris Co., Ltd., Gaythorne Mill, Manchester, 15.—Standard list including prices of the "Drivex" range of cables.

British Central Electrical Co., Ltd., 6 and 8, Rosebery Avenue, London, E.C.1.—Leaflet describing the main features of the standard "Gripper" handlamp.

Power Centre Co., Ltd., Lloyd Street, Wednesbury, Staffs.—Two leaflets on cable sealing boxes (CB.1) and busbar chambers and circuit clamps (BC.1).

Information Department

THE extensive records of our Information Department enable us to reply to most queries, but occasionally we ask our readers' assistance in tracing names and addresses not known to us. We should be glad to have such information regarding the makers of the following:—

"Latona" oil-filled radiators.

General inquiries from readers relating to sources of electrical goods, makers' addresses, etc., are replied to by the Information Department through the post. Inquiries should be accompanied by a stamped addressed envelope.

ELECTRICITY SUPPLY

Uskmouth "A" Inauguration

Scottish Site for Atomic Station?

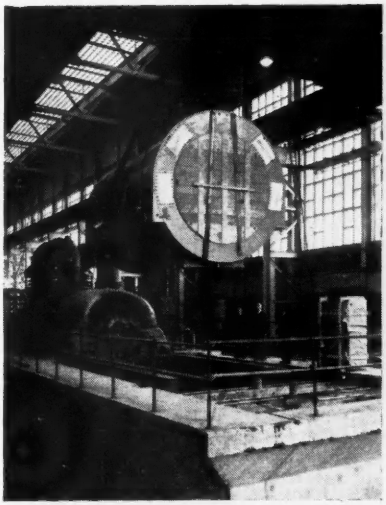
AT the official opening of the Uskmouth "A" power station of the British Electricity Authority, South Wales Division, on 7th October (see *Electrical Review*, 9th October) Mr. H. J. Bennett, divisional controller, outlined the history of the station, which was originally planned in 1946 at the instigation of the former Central Electricity Board and the Newport Corporation electricity undertaking. Mr. Bennett paid tribute to those officers who played a part in the original planning and referred particularly to Mr. T. H. Wood, M.I.Mech.E., A.M.I.E.E., who at that time was the borough electrical engineer of Newport and later became chief generation engineer (construction) for the Division. In paying a tribute to the architect, he said the B.E.A. was sometimes accused of spending too much money on the architectural aspect, but this cost was really trifling considering that the total cost of the Uskmouth power station was £21 million. He thought that we were nearly round the corner, but not quite, in regard to load shedding.

Mr. J. D. Peattie, B.Sc., A.C.G.I., M.I.E.E., deputy chief engineer, B.E.A., said that in researches into increased productivity there had been seen the need for efficient co-ordinated and economic supply of electricity. The former C.E.B. had been well aware of this fact, which was reflected in the local plans for Uskmouth before the days of nationalization. He thought the need of South Wales for more generating plant was reflected in the fact that whereas in South Wales industry provided about 75 per cent of the electrical load, the corresponding average figure for the rest of the country was about 50 per cent.

County Alderman W. J. Greene, J.P., chairman, Monmouthshire County Council, said he was proud of the fact that the borough of Newport took the initial step in establishing the station. The Mayor of Newport, Councillor William Pinnell, B.E.M., performed the opening ceremony.

Hydrogen-Cooled Turbo-Generator

The accompanying picture shows the 120-ton stator of a 60 MW hydrogen-cooled turbo-generator manufactured by the Metropolitan-Vickers Electrical Co., Ltd., being lowered into position at the Chadderton power station of the North Western Division, B.E.A., on 6th October. This station will ultimately have four 60 MW Metropolitan-Vickers turbo-generators.



Stator being lowered into position at Chadderton

Atomic Generating Stations

It is reported that the Ministry of Supply is considering a site in Scotland for the first full-scale breeder reactor electricity generating station. Easy access to the sea, adequate fresh water supply for cooling, and a fairly flat site with a good rock foundation are essential requirements. The station will take about three years to build and will be based on the results of experiments with the small breeder reactor at Harwell. A power station of about 40,000 kW using a natural reactor is already under construction at Calder Hall and is expected to take about two years to complete.

New Yorkshire Standard Tariffs

About 125,000 consumers are affected by standard tariffs for commercial and miscellaneous premises and combined domestic and

commercial premises announced by the Yorkshire Electricity Board. A tariff for restricted-hour supplies, both domestic and commercial, is also being introduced. Some 240 different tariffs are superseded. The new charges, which are also designed to produce an overall increase in revenue of 10 per cent to meet higher costs, operate from the first meter reading on or after 26th October. It is pointed out that electricity can still be bought at ¾d/kWh if sufficient use is made of the supply. The following is a summary of the new tariffs; in the case of prepayment meter supplies an additional quarterly charge of 2s 6d is made:—

COMMERCIAL AND MISCELLANEOUS (C.1).—Four-block sliding scale applicable where m.d. does not exceed 50 kVA. For computing number of kWh in each block premises are divided into four groups: (1) Shops, restaurants, public houses, banks; (2) places of entertainment, hotels, boarding houses, hostels, clubs, educational premises, public buildings, hospitals, etc.; (3) places of worship; (4) other premises. Group 1 and first 2,000 sq ft floor area of all other premises: Initial block (at 4¼d), 18 kWh per 100 sq ft; second (1¾d), 36; and third (¾d), 96. For excess floor area over 2,000 sq ft in the second group, 12, 24 and 114, respectively, and in third and fourth groups 8, 16 and 126. After 150 kWh/100 sq ft in all cases the rate falls to ¾d.

TWO-PART TARIFF (C.2).—Available where m.d. exceeds 20 kVA. Annual demand charge: For each of first 100 kVA, £6 2s 6d (h.v.) and £6 7s 6d (l.v.); next 150 kVA, £5 15s and £6; next 250 kVA, £5 7s 6d and £5 12s 6d; over 500 kVA, £5 5s and £5 10s. "Unit" charge: For first 250 kWh a month per kVA of m.d. in that month, 0·50d (h.v.) and 0·55d (l.v.), and additional supplies at 0·45d and 0·50d, subject to fuel price adjustment at rate of 0·00075d (h.v.) and 0·0008d (l.v.) per 1d/ton variation in coal cost from basic figure of 38s.

Tariffs C.1 and C.2 are available as alternatives for consumers with demands between 20 and 50 kVA.

COMBINED PREMISES.—Four-block sliding scale, the number of kWh in each being obtained by combination of domestic and commercial tariffs for appropriate parts of premises.

RESTRICTED-HOUR TARIFFS.—Applicable to separately wired installations not used 7 a.m.–noon and 3–7 p.m. (Mondays to Fridays) and 7 a.m.–noon (Saturdays). Tariff OP.1, where m.d. does not exceed 50 kVA (for consumers taking supplies and tariffs C.1, combined premises, or domestic), 0·675d/kWh. Tariff OP.2, where m.d. is not less than 20 kVA (available to tariff C.2 consumers). Annual demand charge of £1 15s for each kVA by which m.d. of restricted supply exceeds max. chargeable demand of other supplies, and "unit" charge of 0·425d subject to coal price adjustment. A rental is charged for time switch and additional metering equipment.

Sutherland Power Scheme

Speaking at Brora last week Mr. Thomas Johnston, chairman of the North of Scotland Hydro-Electric Board, said that work would begin next spring on the £8 million Loch Shin scheme in Sutherland. At its peak 800 men would be employed. Progress was being made with the construction of transmission lines along the north coast of Sutherland and Caithness.

Rural Development in North West

Rural dwellers in the North Western Electricity Board's area are to be offered alternative methods of meeting the cost of electricity extensions. Mr. A. O. Johnson, the Board's chief commercial officer, giving details to the Consultative Council, said that the following alternatives would be offered: (*a*) A guarantee of 15 per cent of the capital cost per annum for five years; (*b*) a capital contribution equivalent to the difference between the total prospective reasonable revenue to be received in five years and 75 per cent of the capital cost allocated; and (*c*) a combination of (*a*) and (*b*) whereby the consumer would be able to guarantee an amount in excess of the revenue originally assessed, and would have a corresponding reduction in the capital contribution. Subject to individual negotiations, the capital contributions under (*b*) and (*c*) could be paid over a period of up to ten years.

Installations in Pre-War Houses

The North-Eastern Housing Association is to spend £2,241 on installing electricity in 106 pre-war houses at Spennymoor (Co. Durham) served only with gas. The proposal has been approved in principle by the Ministry of Housing and Local Government.

Isle of Sheppey Supply Failure

Faults occurring in the 33 kV submarine cables across the River Swale last week resulted in the whole of the Isle of Sheppey being deprived of an electricity supply. The cables, it is thought, may have been damaged by shipping. The breakdown occurred just after 6 a.m. on Thursday and the supply was not restored until Friday evening. Sheerness Dockyard, which has its own electricity supply, was not affected and arrangements were made for a limited supply to be given to the South Eastern Electricity Board's system from the dockyard power station.

"Design for Production"

THIS is the title of the latest "team" report published by the British Productivity Council, 21, Tothill Street, London, S.W.1 (price 3s 6d including postage). It embodies the experience of a specialist team which inspected American engineering establishments last year, although it is stressed that the conclusions and recommendations apply also to other industries.

The report draws attention to the need for all concerned to be acquainted with the management's design policy. It recommends the appointment of project engineers to supervise the carrying of design from research to the engineering and production stages. Co-ordination between design and manufacturing engineering should begin, at the latest, at the design-draughting stage and be sustained through to the production stage. More thought should be given to economy in scarce materials and the specification of alternatives by joint design and engineering study. More training opportunities should be given to methods engineers to equip them for co-ordinating work

BOARDS' ACTIVITIES

Points from the 1952–53 Annual Reports

TARIFF standardization, flood damage repairs, system reinforcement and supplies to new houses were among the principal tasks confronting the Boards whose 1952–53 reports are summarized below:—

EASTERN

Despite the fact that the Eastern area suffered most in the floods of 31st January–1st February last—47,591 consumers were temporarily deprived of a supply—the Board succeeded in connecting more new consumers than in the previous year. In fact, the total of 45,727 new connections was the second highest among the fourteen Boards (owing to reclassifications the net increase was only 36,831). New supplies were provided to 872 farms and 96 villages and hamlets, but the bulk of the development was, of course, in new housing. Consumers of this class connected numbered 31,866, including 4,200 in the six new towns in the Board's area. It is satisfactory to note that about 30 per cent of the occupiers have chosen electricity for cooking, particularly as many of the tenants bring gas equipment from their old homes.

Capital expenditure incurred during the year amounted to £6,085,085, of which £2,625,500 was for system reinforcement and the provision of bulk supply points—the highest annual amount yet incurred; £2,847,225 for schemes to deal with new business; and about £400,000 for rural development.

A great deal of additional work was entailed in the introduction of standard tariffs and revisions necessitated by increased costs. Nevertheless, at the end of the year the Board's administrative, technical and clerical staff numbered 363 fewer than a year before. Economies were secured by further District amalgamations. The policy of decentralization followed by the Board proved of great value at the time of the floods, enabling repair work to be carried out under the leadership of local managements.

In the technical section of the report mention is made of the fact that the fault reporting system introduced at the end of 1951 made possible for the first time a detailed statistical analysis of all faults on the h.v. system on an area basis. One result was a decision to extend the use of arc suppression coils on 11 kV systems.

EAST MIDLANDS

The long-term policy of the East Midlands Board—as of the London Board—is to introduce gradually a two-tier organization consisting of Headquarters and Districts. This it proposes to do over the next ten years. Accordingly, when the position of manager of the Derbyshire and Nottinghamshire Sub-Area became vacant through the death of Mr. J. N. Robertson, the Board decided to make the existing managers of Districts directly responsible to Headquarters, pending the adjustment of District boundaries.

The early months of the year were marked by a trade recession, resulting in a fall in electricity sales, but later conditions improved and for the year as a whole 6·2 per cent more was sold. Potential new industrial load of 37,000 kVA was negotiated, including supplies to five collieries aggregating 15,000 kVA and to ironstone mines in Rutland and Lincolnshire amounting to 14,000 kVA.

In consequence of higher costs and the more scattered nature of the premises, somewhat fewer farms were connected (1,080 against 1,150). On the other hand, acceleration of the local housing programme expanded this side of the Board's activities and plans were prepared to afford supplies to 21,000 houses compared with 13,500 in the previous year. As with other Boards, there was a decrease in the value of credit sales of appliances as a result of the restrictions in force during the year. The Board also operates a simple hire scheme and at 31st March it had 143,468 cookers and 34,457 wash-boilers on hire.

A survey of all premises not covered by the domestic and industrial tariffs was completed and standard tariffs have recently been introduced for combined premises, farms, and commercial and miscellaneous premises.

Some 2,636 consumers were affected by the floods, 31 premises being completely destroyed. Severe blizzards and gales also caused damage.

Capital expenditure by the Board in 1952–53 amounted to £5,260,353 (against £4,323,009).

MIDLANDS

During the five years of its existence the Midlands Board has provided 3,560 miles of new mains, commissioned 3,980 substations and incurred an overall capital expenditure of £22·9 million. Substantial reinforcement and other schemes still remain to be undertaken, however, and work put in hand last year included the following:—33 kV supplies in the Aldridge and Walsall Wood area, £221,000; change-over from d.c. to a.c. at Leek, Newcastle-under-Lyme and Stafford, £81,990; additional 66 kV supplies at Bromsgrove, Redditch and Hereford, £77,749; and 11 kV system to replace 6·6 kV system, Sutton Coldfield, £47,535.

Mechanization has helped to speed up and economize in construction work. To minimize supply interruptions by lightning—during the year these numbered 607, or 31 per cent of the total—fuses on transformers are being replaced by solid links and greater use is being made of high-speed auto-reclosers. For economy and improved efficiency more and better placed substations are needed and local authorities are being approached with a view to the use of traffic islands for this purpose.

More consumers were connected last year than in any other area, namely 47,452 : these included 448 industrial and other large concerns; 43,533 houses ; and 1,036 farms. Major schemes sanctioned by the Board included the provision of supplies to 118 farms and 431 other premises, Severn Vale, £51,054 ; 2,214 houses, two churches, a cinema, three schools and 17 business premises, Blurton, Ubberley and Bentilee Farm estates, Stoke-on-Trent, £83,948; 1,017 houses, 448 flats, 27 shops, four schools, church, etc., Egghill Lane, Bunbury Road and Wychall Farm estates, Birmingham, £74,825 ; 1,060 houses and flats, Yew Tree estate, West Bromwich, and new foundry, £50,793 ; additional industrial load, Bilston, £42,040 ; additional supplies to three gasworks, £54,387; and new colliery, Lea Hall, Rugeley, £36,472.

Considerable street lighting development took place in the area during the year, 4,521 additional points being connected.

Cambridge Chair Commemoration

JUST over a year ago we reported that the Worshipful Company of Goldsmiths had been authorized by the British Electrical and Allied Manufacturers' Association to conduct a competition for the design of a rosewater dish and ewer to be presented to Cambridge University. The purpose was to commemorate the endowment by B.E.A.M.A. of the Chair of Electrical Engineering at the University to which Professor E. B. Moullin (King's College) was appointed. Member firms of the Association had subscribed £72,000 for the perpetual endowment of the Chair.

The competition resulted in the selection of the design of Mr. M. E. Gould, of Twickenham Technical College, who was awarded the first prize of £100. The work has been carried out by Mappin & Webb, Ltd.

The gift symbolizes the University, whose arms are chased in enamel and gold in the centre of the rosewater bowl and on the ewer, and the twenty-one Cambridge colleges, whose arms appear in flutes round the inside of the bowl. The names of holders of the Chair will be engraved beneath the arms of the appropriate college. The B.E.A.M.A. emblem is also incorporated in the design and the inscription reads: "This rosewater dish and ewer commemorate the endowment in 1951 by the British Electrical and Allied Manufacturers' Association of the Chair of Electrical Engineering founded with the aid of the Institution of Electrical Engineers in 1944."

Before being formally presented to the University next month by Sir Harry Railing, president of B.E.A.M.A., the dish and ewer are on view to the public at an exhibition of modern ceremonial silver organized by the Goldsmiths' Company at the Royal Festival Hall (12th October to 12th November).

The silver rosewater dish and ewer presented by B.E.A.M.A. to Cambridge University

Manchester Association of Engineers

IN his presidential address on 2nd October to the Manchester Association of Engineers, Professor H. Wright Baker (Professor of Mechanical Engineering, Municipal College of Technology) dealt primarily with the value of team work in engineering training as in its application to practical issues. Illustrating his thesis with relevant anecdotes derived from long experience, he suggested that industry could still do much to discover among apprentices those who possessed both personality and ability to profit from higher studies with a view to fitting them to become leaders and section leaders. A guiding principle should be that to-morrow's work must be done with to-morrow's tools.

Power Station Construction

Committee's Recommendations

THE report of a committee of inquiry into economy in the construction of power stations, which was set up in August, 1952, by the Minister of Fuel and Power, has now been published (H.M. Stationery Office, 2s). The committee, of which Sir Hugh Beaver, M.Inst.C.E., was chairman and which included Mr. C. H. P. Ewbank, M.I.E.E., concerned itself mainly with savings possible in new work during the next decade.

The effect of power station construction on the national building programme was found to be slight, since the requirements of the British Electricity Authority in 1952 absorbed only 1 per cent of the output of bricks, 2 per cent of the cement and 1 per cent of the building and civil engineering labour. About 16 per cent of the available structural and reinforcing steel was, however, required. Present statutory procedure for approving power station sites, which entails delays and increased costs, the committee holds, should be reconsidered.

Design and Layout

While complete standardization of stations is ruled out, a standard design for the building and layout of a generator house should be feasible for each size of turbo-alternator from any one maker at an estimated saving in cost of 10 to 15 per cent. Similar treatment for boilers is not practicable at the present stage of their development, as influenced by wide differences in qualities of coal, but further standardization should be obtainable in auxiliary equipment.

In older stations 60 cu ft of covered space per kW installed was frequent, but for the 100,000 kW sets under design or construction the weighted average building volume has been reduced to 26 cu ft/kW. In two stations now being designed portions of the boiler plant are unhoused, the total covered space being 17·5 cu ft/kW. Apart from increased ratings of sets, the unit system (one boiler per turbine) is an important factor. It is suggested that individual generating stations should in future normally have an installed capacity of at least 400,000 kW.

Coal bunkers might advantageously be removed from the boiler house proper. A single span parabolic building to cover the entire station would, it is estimated, reduce costs appreciably, but all relevant factors have yet to be examined. Since stators can be put into position without overhead cranes, the latter need have a lift of only 50 tons instead of 150 tons.

Alternative Building Materials

The committee condemns (with the support of the Royal Fine Art Commission) the " cathedral-like appearance " of many power stations designed before the establishment of the B.E.A. Bricks should be employed only in exceptional cases; they give a life of centuries to a building which houses plant that will last for only about thirty years. Lightweight corrugated asbestos makes excellent cladding and is relatively inexpensive. Aluminium or resin-bonded sheeting are alternatives. Experiments should be carried out with large prefabricated concrete panels as a substitute for brick or *in situ* concrete.

Architects should become equal partners in design from the early stages. Civil engineering and building work is still broken up into too many separate contracts. The ideal is a single firm contract for each complete power station with guarantees as to time and performance. The aim should be to reduce the time now required for the construction of a power station from four years to two as in the U.S.A. Standards of cost, area and space might well be set by the Central Authority, leaving the Generating Divisions freedom to work within such limits and to undertake a greater share in design. Comparative figures show the building volumes and areas of new power stations designed from 1937 to 1952 inclusive, the ascertained capital costs per kW of typical complete power stations and of extensions commissioned or designed before vesting date, and the estimated cost per kW of projects in hand.

Financial Section

STOCKS and SHARES

BUSINESS in the Stock Exchange has remained brisk, but the buyers have tended to lose some of their former ascendancy. Political developments in Trieste and in British Guiana served to encourage an inclination to take profits and to avoid further commitments. This factor was held to account for an easier tendency in the gilt-edged market, although there were no quotable changes among the British Electricity stocks. Overwhelming success of the Babcock & Wilcox debenture issue showed strikingly the weight of money ready to invest in first-class securities. Stockholders and other subscribers put in applications exceeding £58 million for the £4 million stock offered. Dealings began this week at a premium of 1½ on the issue price of 97½: later the premium eased off as allottees of £100 stock came in to sell.

A.E.I. Bonus

Bonus shares issued to ordinary shareholders in Associated Electrical Industries, in the proportion of one new share for every one held, were received over last week-end. Opening prices were 42s for the new shares and 41s ex-rights for the old, the difference being accounted for mainly by the exemption from stamp duty on transfers of the former. Shareholders have been warned that if the amount distributed in dividend remains the same, the rate per cent on the doubled capital would, of course, be halved. Since that eventuality would mean a yield of about £4 17s 6d per cent on the ordinary shares at their advanced price, it may be taken, nevertheless, that the bonus is not entirely dissociated, in market ideas, from future dividend possibilities.

Cossor Issue

Shareholders in A. C. Cossor, Ltd., received last week-end their provisional allotment letters in connection with the issue of 1,600,000 new 5s ordinary shares at 6s per share. Dealings in them opened at the beginning of this week at a premium of 9d to 1s, the old shares being called 6s 9d ex-rights. Shareholders have the right to subscribe in the proportion of two new for every three shares held, and to apply for any excess not subscribed by way of rights. Regarding dividend prospects, the chairman has expressed reasonable confidence in the maintenance of the present rate of 10 per cent after the increase in the capital. There is, thus, a prospective yield of £7 2s 10d on the new shares at their all-in price of 7s, free of transfer stamp.

Price Changes

Although the general tendency among industrials has been towards the easy side, advances have been continued at many points. English Electrics remained particularly in favour, rising another 2s to 57s. Ward & Goldstone gained the same amount to 41s. Chloride Electricals again improved, while Reyrolle, Parsons and Lucas held the big rises of the previous week. Others to improve included Plessey, Aerialite, Dictograph and Hall Telephone. Brook Motors were quoted at 33s 9d, ex rights to the bonus shares.

Dividends and Results

Holophane, Ltd., is maintaining its dividend for 1952–53 at a total of 20 per cent, the rate to which it was increased (following a sharp rise in profits and a capital bonus) a year ago. Net profit for the year is close up to the previous figure at £52,400, which covers more than three times the amount distributed in the dividend. There was little subsequent change in the price of the 5s shares which, at 12s 6d, offer a yield of 8 per cent. Morphy-Richards are also paying the same ordinary dividend as before, 40 per cent, and from increased profits. The 4s shares at 15s 6d held the rise which preceded the news, and now show a return of rather more than 10 per cent.

Ericssons and L.E.W.

The £1 shares of London Electric Wire & Smiths have risen by the better part of 10s over the past month to 69s 6d, by far the best price for many years. Last year's distribution of 15 per cent was covered fully six times by the surplus of profits, and the balance sheet showed reserves at a total several times larger than the £1 million ordinary capital. An interim dividend declaration is due this month. Ericsson Telephones' last tax-free distribution of 22 per cent came from earnings of four times as much, and the reserves had reached similarly substantial proportions. The interim dividend for the current year was maintained this month at the previous rate.

ELECTRICAL INVESTMENTS

Past Week's Price Changes

Company	Dividend Previous	Dividend Last	Middle Price 12th Oct. 1953	Week's Rise or Fall	Est. Yield £	Est. Yield s	Est. Yield d
Gilt-edged and Overseas Stocks							
Brit. Elec. 1968/73	3	3	89½	—	3	7	0
Brit. Elec. 1974/77	3	3	88½	—	3	7	10
Brit. Elec. 1976/79	3½	3½	93½xd	—	3	14	9
Brit. Elec. 1974/79	4½	4½	102	—	4	3	4
Calcutta Elec. ..	6†	6†	18/6	−6d	6	9	9†
East African Power	7	7	22/-	−6d	6	7	3
Nigerian Elec. ..	10	10	24/-	—	8	6	8
Palestine Elec. "A"	5†	Nil	16/6	−6d		—	
Perak Hydro-Elec.	Nil	Nil	16/6	—		Nil	
Equipment and Manufacturing							
AberdareCables(5/-)	20	25	8/6	—	7	7	0*
Aerialite (1/-) ..	83½	88½	9/3	+6d	9	11	0
Allen, W. H. ..	15	15	46/-	—	6	10	5
Aron Elec. Ord. ..	15	20	42/6	—	9	8	2
Assoc. Elec. Ord.	20	20	41/3	—	4	17	7*
Automatic Tel. & El.	15	15	61/3	+6d	4	18	0
Babcock & Wilcox	18	18	69/9	−6d	5	3	3
Baldwin, H. J.(2/-)	20	20	4/3	—	9	8	4
Bakelite (10/-) ..	—	12½	22/-	−6d	5	13	8
British Aluminium	12	12	37/9	−6d	6	7	4
B.I. Callender's ..	9	10	39/-	—	5	2	7
British Thermostat (5/-)	30	35	17/6	—		—	
British Vac. Cleaner (5/-)	25	25	13/3	—	9	8	8
Brook Motors (10/-)	20	20	33/9xr	—		—	
Brush Ord. (5/-) ..	10	4	4/3	−3d		—	
A. F. Bulgin (1/-)	30	30	3/1½	+1½d	9	12	0
Burco (5/-) ..	38¾	35	18/9	—	9	6	8
Chloride El. Storage	15	20	81/3	+ ⅛	4	18	6
Cole, E. K. (5/-) ..	25	25*	20/6	—	6	2	0
Cossor, A. C. (5/-)	Nil	10	6/9xr	—	7	8	9*
Crabtree (10/-) ..	17½	17½	29/-	—	6	0	8
Crompton Parkinson Ord. (5/-) ..	11½	11½	12/9	—	4	8	3
De La Rue (5/-) ..	35	Nil	9/-	—		—	
Decca (5/-) ..	112½	150	31/6	−3d	4	15	3*
Dewhurst (2/-) ..	22½	19*	5/6	—	6	18	3
DictographTel.(2/-)	20	20	5/9	+3d		—	
E.M.I. (10/-) ..	12	12	14/6	+3d	8	5	6
Electrical Components (5/-) ..	20	20	11/-	+1/6	9	1	10
Elec. Construction	15	15	53/9	—	5	11	9
Enfield Cable Ord.	7½	5	21/3	—	4	14	0
English Electric ..	15	15	57/-	+2/-	5	5	3
Ericsson Tel. (5/-)	22†	22*†	42/-	−6d	2	12	4†
Ever Ready (5/-) ..	35	35	27/6	—	6	7	3
Falk Stadelmann	15	15	43/6	—	6	17	7
G.E.C. Ord. ..	22½	11½*	39/6	—	5	14	0
General Cables (5/-)	30	30	16/9	—	8	19	2
Greenwood & Batley	15	17½	40/9	—	8	11	9
Hackbridge Cable (5/-)	20	20	12/9	—	7	17	0
Hackbridge Hewittic (5/-)	20	20	17/6	—	5	14	2
Hall Tel. Acc.(10/-)	10	10	10/6	+6d	9	10	6
Heatrae (2/-) ..	12½	12½	4/-	—	6	5	0
Henleys (10/-) ..	20	10½*	17/3	—	6	1	9
Holophane (5/-) ..	20	20	12/6	—	8	0	0
Hoover (5/-) ..	35	25	25/9	−6d	4	17	0
Equipment and Manufacturing (continued)							
Intl. Combustion (5/-)	25	15*	14/3	—	5	5	3
Johnson & Phillips	15	15	53/-	+6d	5	13	2
Lancashire Dynamo	12½	12½	43/9	—	5	14	3
Laurence, Scott (5/-)	15	15	13/3	—	5	13	2
London Elec. Wire	12½	15	69/6	+ ⅛	4	6	3
J. Lucas	7½	9½	46/3	—	4	2	3
Marryat & S. (2/-)	22½	22½	5/9	—	7	16	6
Mather & Platt ..	12½	15	52/-	+6d	5	15	5
Metal Industries ..	15	12*	40/9	−3d	5	17	9
Mid. Elec. Mfg. ..	15	15	60/-	—	5	0	0
Murex	15	15	53,-	−6d	5	13	2
Newman Ind. (2/-)	10	10	2/3	—	8	17	9
Oldham & Son (1/-)	35	17½*	2/6	—	7	0	0
Parnall (Yate) (5/-)	6	6	3/3	−1½d	9	4	6
Parsons, C. A. ..	10*	12½	76/6	—	3	5	6
Plessey (5/-) ..	22½	25	29/6	+ ⅛	4	4	9
Pye Deferred (5/-)	18	20	19/6	—	5	2	6
Revo (10/-) ..	27½	27½	16/3	—		—	
Reyrolle	10*	12½	70,-	—	3	11	5
Scot. Cable (4/-) ..	32	20*	13,-	—	6	3	0
Siemens Ord. ..	10	10	34/6	−6d	5	16	0
Southern Areas ..	5	6	17/6	—	6	17	3
Strand Elec. (5/-)..	17½	17½	8/3	—	10	12	2
Sturtevant (5/-) ..	17½†	18·1*†	28/-	—	3	4	6†
Sun Elec.	15	15	25/-	—	12	0	0
Switchgear & Cowans (5/-)	22½	22½	14/-	—	8	0	9
Taylor, T. (5/-) ..	20	25	20/-	—	6	5	0
T.C.C. (10/-) ..	20	20*	40/-	—		—	
T.C. & M. ..	10	8½*	29/-	+6d	5	17	3
Telephone Mfg. (5/-)	10	10	7/9	+3d	6	9	0
Thorn Elec. (5/-)	10	12½	11/3	—	5	11	1
Tube Investments	25	15*	64/6	+6d	4	13	0
Vactric (5/-) ..	Nil	Nil	7/6	—		—	
Veritys (5/-) ..	7½	10	4/6	—	11	2	2
Walsall Conduits (4/-)	70	70*	44/6	—	6	5	10
Ward & Goldstone (5/-)	45	45*	41/-	+2/-	5	9	9
Watford (2/-) ..	25	25	5/6	+3d		—	
Westinghouse Brake	14	15	57/6	—	5	4	2
West, Allen (5/-) ..	15	15	12/6	—	6	0	0
Trusts, Transport and Communications							
Anglo-Am. Tel.: A Ord.	—	6	85½	—	7	0	4
Ord.	—	3¾	57½	—	6	10	5
Anglo-Portuguese	8	8	22/3	—	7	3	9
Brit. Elec. Traction: Def. Ord. (5/-)..	25	35	31/3	+3d	5	12	0
Cable & Wireless: Ord.	8	8	139	+1½	5	15	0
4% Loan ..	4	4	97	—	4	2	6
Calcutta Trams ..	6†	2½†	17/6	−1/6		—	
Cape Elec. Trams	5½	5½	9/-	−1/-	12	4	6
Marconi Marine ..	10	10	27/6	—	7	5	6
Oriental Tel. Ord.	16	16	72/6	+ ⅛		—	
Telephone Props.	8	8	5⅝	+ ⅛		—	
Tele. Rentals (5/-)	10	10*	9/6	+3d	5	5	3

* After capital bonus. † Dividends are paid free of income tax.

The above quotations are based upon the middle prices given in the Stock Exchange Daily Official List.

REPORTS and DIVIDENDS

Newton Brothers (Derby), Ltd.—In the course of his speech at the annual meeting held on 5th October, Mr. F. V. Pipe (chairman) said that outstanding orders at 31st March last were higher than at March, 1952, and were still well maintained, and although orders completed and invoiced during the year showed an encouraging increase over the preceding year, a considerable amount of overtime working was necessary to achieve this and they could have done better still had more labour been available. Export orders amounted to 20 per cent of the total production, but some orders were being lost to other countries which were able to offer lower prices and shorter deliveries.

Holophane, Ltd.—A net profit of £124,164 is shown in the accounts for the year ended 30th June last, and after deducting £71,750 for taxation, the balance available is £52,414, as compared with £53,734 for the previous year. General reserve receives £25,000, and it is proposed to pay a final ordinary dividend of 12½ per cent, making 20 per cent for the year (unchanged). The balance carried forward is £46,426 (against £36,512 brought in).

Vactric, Ltd.—A group loss of £127,586 is shown for the year to 28th March last, as compared with a profit of £73,061 for the preceding year. The figure is struck after providing £39,776 for depreciation, £19,468 for taxation, and £58,106 additional amounts written off fixed assets, and after crediting depreciation provided in previous years on fixed assets sold, £48,106, and income from trade investment, £2,276. Income tax recoverable amounts to £38,000 and the amount transferred from loans repayment reserve £66,000, leaving a total net deficit of £23,586 (the previous year's surplus was £55,061). This is deducted from a balance of £152,321 brought in, leaving £128,735.

It is stated that alterations to manufacturing arrangements and the general reorganization consequent thereon, have been carried through successfully, and the company and its subsidiaries are now trading profitably.

The Calcutta Tramways Co., Ltd., reports a profit balance for 1952, after taxation, in accordance with the agreement dated 30th August, 1951, of £87,457 (same). Taxation absorbed £95,000, and there was credited tax provision made in previous years no longer required of £23,857. Renewals and replacement account receives £80,000, and special reserve account £11,974. The directors state that they are unable to recommend a final ordinary dividend and the distribution is therefore limited to the interim of 2½ per cent, tax free, paid in May last. This compares with 6 per cent, tax free, paid for the previous year.

Morphy-Richards, Ltd., report a group profit for the year ended 30th June last of £187,733, as compared with £181,586 for 1951-52. After deducting £28,571 for depreciation, £72,868 for United Kingdom taxation, £10,917 for overseas taxation, and proportion attributable to minority shareholding, £8,785, the profit attributable to Morphy-Richards, Ltd., is £66,592 (against £46,971). It is proposed to pay a final ordinary dividend of 25 per cent, maintaining the distribution for the year at 40 per cent, and to carry forward £127,137 (against £90,904 brought in).

A. C. Cossor, Ltd.—Underwriting has been completed for a rights issue of 1,600,000 5s ordinary shares at a price of 6s per share. They will be provisionally allotted to existing ordinary shareholders in the proportion of two new ordinary shares for every three held. The net proceeds of £454,500 will be used to reduce the company's indebtedness to its bankers.

Associated Electrical Industries, Ltd.—The resolution increasing the authorized capital and approving the capitalization of reserves was passed by stockholders at an extraordinary general meeting held in London on 8th October.

The Watford Electric & Manufacturing Co., Ltd.—The directors announce that they do not propose to pay a further ordinary dividend, other than the 5 per cent interim already declared on the former £88,000 capital, before 1st November next. Last month the ordinary capital was increased to £140,800 by a scrip issue of 528,000 ordinary 2s shares.

G. Hopkins & Sons, Ltd., are passing the interim ordinary dividend in respect of the year ending 31st December next. The directors announce that the question of a final dividend will be considered when the full year's accounts are available. Last year an interim ordinary dividend of 7½ per cent was paid on £137,500 capital, and was followed by a final distribution of 10 per cent on the present capital of £172,500.

The Bagdad Light & Power Co., Ltd., reports a net profit for 1952 of £93,328, as compared with £116,776 for the previous year. The dividend for the year is maintained at 7½ per cent, tax free.

The Calcutta Electric Supply Corporation, Ltd., has declared an interim dividend of 3 per cent, tax free (unchanged).

Ultra Electric (Holdings), Ltd., is to offer stockholders 180,000 ordinary 5s shares at 5s 6d a share in the proportion of one new ordinary share for every seven held. The proceeds of the issue will be used towards financing the construction of a new building which will accommodate the research and development departments of the company.

New Companies

M.E.A.C., Ltd.—Registered 5th October. Capital £100. Manufacturers of, agents for and wholesale and retail dealers in general electrical and other equipment and appliances, including catering, domestic and household electrical equipment, etc. Directors : L. M. Spreadbury, J. L. Florence and F. G. Williams. Regd. office : 21, Newman Street, London, W.1.

Oaklands Electric, Ltd.—Registered 30th September. Capital £2,000. Electrical engineers and contractors, radio and television engineers, etc. Directors : C. H. Cunliffe and F. H. Moore. Regd. office : 421, Hatfield Road, St. Albans, Herts.

Liquidations

Paramount Supplies (Manchester), Ltd., electrical equipment manufacturers.—Winding up voluntarily. Liquidator, Mr. J. Ross, 16, John Dalton Street, Manchester, 2, appointed 30th September.

Hallicrafters Great Britain, Ltd., manufacturers of radio, television and electronic equipment.—Winding up voluntarily. Liquidator, Mr. R. A. Curtis, 15, Jermyn Street, London, S.W.1, appointed 29th September.

Advance Electrical Co., Ltd., electrical contractors.—Winding up voluntarily. Liquidator, Mr. E. V. Quaife, 87, Mount Pleasant Road, Tunbridge Wells, Kent, appointed 2nd October.

Bankruptcies

H. H. Heckman, 32, Pollards Road, Morden, Surrey, mechanical and electrical engineer.—Receiving order made 2nd October on a creditor's petition.

F. L. Napier, 5, School Road, Sale, Ches, electrical contractor.—Last day for receiving proofs for dividend 20th October. Trustee, Mr. G. H. Eaves, 47, Mosley Street, Manchester, 2.

H. Schofield, 97, Deardengate, Haslingden, Lancs, carrying on business under the name of the Greenfield Electric Co., as an electrical and radio engineer.—Receiving order made 5th October on debtor's own petition.

G. P. Woolley, "Wing Cottage," 28, Queen Street, Southminster, Essex, electrician.—Receiving order made 3rd October on debtor's own petition. First meeting 23rd October at 58-61, York Terrace, Regent's Park, London, N.W.1. Public examination 4th December at the Shire Hall, Chelmsford.

I. W. Evans, 73, Chestnut Avenue, Oswestry, Salop.—Public examination 29th October at the Court House, Severn Place, Newtown.

G. A. Ince, 124, Higher Road, Urmston, Lancs, trading as the "Higher Road Electrical," electrical and radio contractor.—Trustee, Mr. F. C. Ormrod, 20, Byrom Street, Manchester, 3, Official Receiver, released 2nd October, 1953.

Nursing Exhibition

THE important part played by electricity in the treatment and care of patients in hospitals, nursing homes and clinics is stressed in an extensive exhibit arranged by the British Electrical Development Association at the thirty-eighth annual London Nursing Exhibition and Professional Nurses and Midwives Conference which the *Nursing Mirror* is holding this week at the Seymour Hall, London, W.1.

Besides offering practical suggestions to matrons and others responsible for equipping hospitals, the display enlightens nurses as to the part played by modern electromedical apparatus. In the therapy section an ingenious new device is shown for the visual and audible recording of the action potential of muscular tissue, while in the maternity section there is a nerve stimulator such as is used in cases of baby asphyxiation. Of exceptional interest is an artificial heart-lung, consisting essentially of a blood oxygenator and pumps driven by special types of electric motors, which take over the duties of the heart and lungs while these organs are being operated on : electronic control is used to take the place of the delicate balancing mechanism of the human body.

A selection of electrical equipment to make life easier for nurses in the off-duty periods is shown in the nurses' home section and includes clothes washers, dryers, hair-dryers, vacuum cleaners, kettles, coffee percolators, clocks, fires, television sets, etc. A self-contained stainless steel laundry is displayed in the laundry section in the form of a washing machine, hydro-extractor and a laundry truck capable of handling 22 lb of dry clothes in one operation. The cleanliness and efficiency of electricity in catering is typified by a selection of equipment including a large capacity refrigerator, a heavy-duty cooker, a dish washer, a potato peeler and a power operated bread cutter.

Among the exhibits of individual manufacturers are the no-cord iron, ozonizer, clothes dryer and airer shown by J. & H. Walter, Ltd.

The exhibition closes this evening (Friday).

NEXT WEEK'S EVENTS

Monday, 19th October

BRISTOL.—S.W.E.B., Colston Avenue, 6 p.m. I.E.E. Western Supply Group. Chairman's Address and film on "Manufacture and Installation of Oil-filled Cables," by L. F. M. Baker.

LIVERPOOL.—At the Royal Institution, Colquitt Street, 6.30 p.m. I.E.E. Mersey and North Wales Centre. "Design Features of Certain British Power Stations," by S. D. Whetman and A. E. Powell. (Joint meeting with the Liverpool Engineering Society.)

Radiant House, Bold Street, 7.15 p.m. Incorporated Plant Engineers, Merseyside and North Wales Branch. "Design of a Central Heating System," by N. Woodhead.

LONDON.—Savoy Place, W.C.2, 5.30 p.m. Institution of Electrical Engineers. Informal meeting. Discussion on "Television," opened by the President.

NEWCASTLE-UPON-TYNE.—King's College, 6 p.m. I.E.E. North-Eastern Radio and Measurements Group. "Recent Ideas and Experiments in Magnetism," by Prof. L. F. Bate.

READING.—George Hotel, 7.15 p.m. I.E.E. Reading District meeting. "The Use of Artificial Irradiation in Horticulture," by Prof. R. H. Stoughton.

Tuesday, 20th October

CHELMSFORD.—Public Library, 7 p.m. I.E.E. London Students' Section. District Meeting. Chairman's address, "Wave-Guide Techniques," by M. H. Alder.

EDINBURGH.—Carlton Hotel, North Bridge, 7 p.m. I.E.E. South East Scotland Sub-Centre. "Insulation of Rotating Electrical Machinery," by E. Jones.

LEEDS.—1, Whitehall Road, 6.30 p.m. I.E.E. North Midland Utilization Group. "Research in the Electrical Manufacturing Industry," by L. J. Davies.

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Measurements Section. Chairman's Address, by J. F. Coales.

2, Savoy Hill, W.C.2, 6.30 p.m. Association of Supervising Electrical Engineers. Presidential Address, "Education and Training in the Electrical Industry," by C. T. Melling.

MANCHESTER.—Engineers' Club, Albert Square, 6.15 p.m. I.E.E. North-Western Supply Group. "An Assessment of the Impregnated Pressure Cable," by Dr. L. G. Brazier, D. T. Hollingsworth and Dr. A. L. Williams.

NOTTINGHAM.—Gas Showrooms, 6.30 p.m. I.E.E. East Midland Centre. Informal lecture on "Lightning Surges," by Dr. R. H. Golde.

PORTSMOUTH.—At the B.E.A., High Street, 7.30 p.m. A.S.E.E. Portsmouth Branch. "Coloured and Directional Light as Applied to the Stage," by S. G. Applebee.

SWANSEA.—Mackworth Hotel, 7.30 p.m. Incorporated Plant Engineers, South Wales Branch. "Lubrication," talk and films.

Wednesday, 21st October

BRISTOL.—Grand Hotel, 7.15 p.m. Incorporated Plant Engineers, Western Branch. "Engineering Aspects of Water Supply with Special Reference to the Bristol Area," by R. W. Melvin.

GLASGOW.—425/427, Sauchiehall Street, 7 p.m. Incorporated Plant Engineers, Glasgow Branch. "Fire Prevention; Fire-fighting in Industrial Premises," by M. Chadwick.

LONDON.—Waterloo Bridge House, S.E.1, 5 p.m. Institution of Post Office Electrical Engineers, London Centre. Informal meeting. Vice-chairman's Address, "Some Aspects of the Growth and Maintenance of the Telephone Service," by G. S. Berkeley.

School of Hygiene & Tropical Medicine, Keppel Street, Gower Street, W.C.1, 6 p.m. British Institution of Radio Engineers, London Section. Annual general meeting, followed at 7 p.m. by "Printed Circuits: Some Principles and Applications of the Foil Technique," by Dr. P. Eisler.

I.E.E. London Students' Section, 8.30 p.m. Visit to Times Publishing Co.

MANCHESTER.—Engineers' Club, Albert Square, 6.30 p.m. I.E.E. North-Western Radio Group. "Colour Television," by Dr. A. J. Biggs.

MIDDLESBROUGH.—Cleveland Scientific & Technical Institute, Corporation Road, 6.30 p.m. I.E.S. Tees-Side Group. "Shipyard Lighting," by J. S. McCulloch.

NOTTINGHAM.—E.M.E.B., Smithy Row, 7.30 p.m. A.S.E.E. Nottingham Branch. "High Frequency and its Application in Industry," by J. E. Kosier.

OXFORD.—37, George Street, 7 p.m. I.E.E. Oxford District meeting. "The Use of Aluminium in the Electricity Supply Industry," by A. Gregory.

PRESTON.—N.W.E.B., 19, Friargate, 7.15 p.m. I.E.S. North Lancashire Group. Presidential Address, by W. R. Stevens.

ROCHESTER.—Bull Hotel, 7 p.m. Incorporated Plant Engineers, Kent Branch. "Heat Recovery from Oil Engines," by N. Halliwell.

SALISBURY.—S.E.B. Showrooms, 17, New Canal, 6.30 p.m. I.E.E. Southern Centre. "Electricity in Farm Crop-Drying," by C. A. Cameron Brown and P. G. Finn-Kelcey.

SHEFFIELD.—Grand Hotel, 6.30 p.m. I.E.E. Sheffield Sub-Centre. Chairman's address by W. E. B. Nettleton.

STAFFORD.—English Electric Co.'s Lecture Theatre, 7 p.m. I.E.E. North Staffs Sub-Centre, Students' Section. Chairman's Address, by A. B. J. Reece.

STOCKTON-ON-TEES.—Vane Arms Hotel, 7.30 p.m. Institution of Works Managers, Tees-Side Branch. "Engineering Problems in Switzerland," by H. Bauer.

WIMBLEDON.—The Guild House, 32, Worple Road, 8.15 p.m. A.S.E.E. South West London Branch. "The Calender," by Dr. L. E. C. Hughes.

Wednesday, 21st October, to Saturday, 31st October

LONDON.—Earls Court. International Motor Exhibition.

Thursday, 22nd October

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Utilization Section. Chairman's address by B. L. Metcalf.

Thursday, 22nd October, to Sunday, 25th October

MALVERN.—Council for the Preservation of Rural England. Fourteenth National Conference. "The Countryside—Profit and Loss."

Friday, 23rd October

BRISTOL.—S.W.E.B., Colston Avenue, 6.15 p.m. I.E.S. Bath and Bristol Centre. "The Development of the Tungsten Filament Lamp," by B. P. Dudding.

GILLINGHAM.—Central Hotel, Watling Street. Incorporated Plant Engineers, Kent Branch. Annual dinner and dance.

LONDON.—Townsend House, Greycoat Place, S.W.1, 7 p.m. Junior Institution of Engineers. "Waste Heat Recovery as Applied to Diesel Engines," by R. M. Tufnell.

Victoria Halls, Bloomsbury Square, W.C.1, 7.30 p.m. I.E.E. London Students' Section. Autumn dance.

Saturday, 24th October

KINGSTON.—I.E.E. London Students' Section. Visit to power station.

E.P.E.A. (Southern Meter Group)

THE first meeting of the new session of the Southern Meter Group of the Electrical Power Engineers' Association will be held at Caxton Hall, Westminster, S.W.1, on 30th October at 6.30 p.m., when Mr. G. F. Shotter will read a paper on "Errors, Performance and Characteristics of Induction Type Energy Meters."

NEW PATENTS

Electrical Specifications Recently Published

The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (2s 8d each including postage) will be obtainable after 25th November from the Patent Office, 25, Southampton Buildings, London, W.C.2.

1946

9428. British Thomson-Houston Co., Ltd.—Electric regulators. 27th March, 1946. (700340.)

29273. General Electric Co., Ltd., and Jenkins, R. O.—Electrical counting circuits. 1st December, 1950. (700001.)

1949

13012. Postmaster General.—Electron-discharge valve amplifiers. 20th October, 1950. (700162.)

15512. Western Electric Co., Inc.—Electrical semi-conductive devices and systems utilizing them. 10th June, 1949. (700231.)

15994. Etablissements E. Jaeger and Held, S. S.—Electric timepieces. 15th June, 1949. Cognate application 15995, 26th April, 1949. (700082.)

21020. Western Electric Co., Inc.—Electric circuit elements, devices and systems utilizing semi-conductive bodies. Cognate application 21021, 19th August, 1948. (700232.)

21022. Western Electric Co., Inc.—Devices for converting mechanical vibrations to electrical variations. 12th August, 1949. (700233.)

22790. Western Electric Co., Inc.—Electric circuits utilizing semi-conductive devices. 2nd September, 1949. (700235.) 24486. Electric circuit elements and devices utilizing semi-conductive materials. 23rd September, 1949. Cognate application 24487, 24th September, 1948. (700236.)

25532. Submarine Cables, Ltd.—High pressure resistant seals suitable for submarine cable repeater housings. 4th October, 1950. (700163.)

28275. Western Electric Co., Inc.—Semi-conductor amplifier circuits. 4th November, 1949. (700237.)

31854/7. Babcock & Wilcox, Ltd.—Combustion apparatus. 8th December, 1950. (700003/6.)

32332. Western Electric Co., Inc.—Circuits employing semi-conductor amplifier devices. 16th December, 1949. (700238.) 32974. Electric oscillation generators utilizing semi-conductor devices. 23rd December, 1949. (700239.) 33224. Electric oscillation generating devices utilizing semi-conductor amplifiers. 29th December, 1949. (700240.)

1950

1092. Standard Telephones & Cables, Ltd.—Selection system for electrical circuits or equipments. 16th January, 1950. (700088.)

1096. Standard Telephones & Cables, Ltd. (Hertog, M. den).—Telecommunication exchange systems. 12th January, 1951. (700089.)

1620. Metropolitan-Vickers Electrical Co., Ltd.—Methods and apparatus for use in the investigation of heat conduction and analogous problems. 13th February, 1951. (700166.)

3426. Electric & Musical Industries, Ltd.—Television or like receiving aerials. 12th February, 1951. (700167.)

3998. Barker, D. R., and Barker, W. H.—Ventilating fans. 17th April, 1951. (700091.)

6882. British Thomson-Houston Co., Ltd.—Gas-turbine electric power plants. 20th March, 1950. (700092.)

9221. Western Electric Co., Inc.—Semi-conductor electric signal translating devices. 14th April, 1950. (700241.) 10500. Electric circuit devices utilizing semi-conductive materials. 28th April, 1950. (700242.) 13461. Electric signal translating circuits employing transistors. 30th May, 1950. (700243.)

18434. British Thomson-Houston Co., Ltd.—Control systems for air compressor plants. 24th July, 1950. (700098.)

21492. Telegraph Construction & Maintenance Co., Ltd.—Coating metal-sheathed cables with plastic material. 9th August, 1951. (700177.)

24478. Communication Engineering Pty., Ltd.—Electrical multiplying arrangements. 6th October, 1950. (700245.)

24715. Western Electric Co., Inc.—Semi-conductive electrical translating devices. 10th October, 1950. (700244.)

25240. Compagnie Electro-Mécanique.—Mounting and fixing of the fixed blades of axial-flow turbines and compressors. 17th October, 1950. (700012.)

27681. British Thomson-Houston Co., Ltd., and Mills, R. V.—Switching arrangements for controlling low-pressure electric discharge lamps. 18th October, 1951. (700014.)

29973. Automatic Telephone & Electric Co., Ltd.—Carrier current transmission systems. 29th November, 1951. (700105.)

30241. Burndept, Ltd.—Voltaic cells. 1st August, 1951. (700304.)

31225. Metropolitan-Vickers Electrical Co., Ltd.—Circuit arrangements for electrical discharge tubes. 28th September, 1951. (700107.)

1951

640. British Insulated Callender's Cables, Ltd.—Methods for securing leads to electric capacitors. 8th January, 1952. (700311.)

1426. Svenska Ackumulator Aktiebolaget Jungner.—Apparatus for effecting electric current impulses separated by time intervals of adjustable length. 18th January, 1951. (700247.)

1960. Crompton Parkinson, Ltd.—Electrodes for electrical discharge apparatus. 15th January, 1952. (700313.)

3155. Ferranti, Ltd.—Fire-control apparatus. 11th February, 1952. (700315.)

4468. Standard Telephones & Cables, Ltd.—Visual tuning indicator electron discharge tubes. 23rd February, 1951. (700192.)

4762. Benjamin Electric, Ltd., and Campbell, H. G.—Electric lamp sockets. 27th February, 1952. (700317.)

7860. Soc. des Electrodes de la Savoie.—Electric furnace arrangements. 4th April, 1951. (700251.)

8805. Welch, L.—Electrically operated spraying device incorporating a reciprocating pump for spraying paint and other liquids. 25th February, 1952. (700199.)

9524. Metropolitan-Vickers Electrical Co., Ltd.—Electromagnetic device. 31st January, 1952. (700019.)

10673. Standard Telephones & Cables, Ltd.—Electronic counting circuits. 2nd May, 1952. (700201.)

11112. English Electric Co., Ltd.—Automatic weir arrangement for the tail race of a hydraulic reaction turbine. 25th April, 1952. (700320.)

11619. McGeoch & Co., Ltd., W.—Electric lampholders and their manufacture. 19th May, 1952. (700321.)

12686. Briggs, G.—Phase-shifting network. 29th May, 1952. (700324.)

12738. Associated Electrical Industries, Ltd.—Voltage-stabilizing systems. 31st March, 1952. (700208.)

13997. Lucas (Industries), Ltd., J.—Vehicle electric lamp. 28th April, 1952. (700204.)

15067. Schweizerische Lokomotiv- und Maschinenfabrik.—Ventilating and air filtering system for diesel-electric driven locomotives. 25th June, 1951. (700326.)

16022. Wipac Development, Ltd.—Electric power supply systems for wheeled vehicles. 4th July, 1952. (700327.)

17252. English Electric Co., Ltd.—Electrical instruments. 18th July, 1952. (700329.)

17856. Standard Telephones & Cables, Ltd.—Electric loudspeaker amplifying systems. 27th July, 1951. (700129.)

18255. Hercules Electric & Manufacturing Co., Inc.—Apparatus for the feeding of magnetic sheet material. 1st August, 1951. (700130.)

18622. Oldham & Son, Ltd., and Martin, J. R.—Electric batteries. 24th July, 1952. (700131.)

21375. Electrokemisk Aktieselskap.—Electrode supporting means for electric furnaces. 11th September, 1951. (700218.)

21424. Soc. d'Etudes Chimiques pour l'Industrie et l'Agriculture.—Method of accelerating the speed of sedimentation of solid particles contained in solutions of electrolytes. 11th September, 1951. (700220.)

21876. Aero Materiel Aktiebolag.—Electrical generators. 18th September, 1951. (700036.)

21930. Siemens Soc. per Azioni.—Control systems for single-phase asynchronous motors. 18th September, 1951. (700258.)

22668. Naamlooze Vennootschap Philips' Gloeilampenfabrieken.—Thermal regenerators. 28th September, 1951. (700038.)

23946. Philips Electrical Industries, Ltd.—Mountings for hand telephones adapted to be supported on a vertical surface. 15th October, 1951. (700041.)

24747. Gilbert, C. E.—Electrical plug or socket connectors. 23rd October, 1951. (700261.)

26096. General Electric Co., Ltd., and Judson, A. E.—Mounting devices for electrical components. 16th September, 1952. (700226.)

26269. Heinrich, R. F.—Two-stage electrostatic precipitators. 9th November, 1951. (700046.)

27454. Soc. d'Electronique et d'Automatisme.—Telephone handsets. 22nd November, 1951. (700228.)

28592. Hoover, Ltd.—Armatures for dynamo-electric machines. 6th December, 1951. (700141.)

29152. Marconi's Wireless Telegraph Co., Ltd.—Waveguide distribution switches. 9th October, 1952. (700230.)

29264. Compagnie pour la Fabrication des Compteurs et Matériel d'Usines à Gaz.—Devices for superposing currents of audio-frequencies in an electrical energy distribution network. 13th December, 1951. (700264.)

29395. Telefonaktiebolaget L. M. Ericsson.—Methods of fastening two wires or like elements on a plate, with one wire on each side of the plate. 14th December, 1951. (700142.)

29860. Standard Telephones & Cables, Ltd.—Piezo-electric element. 20th December, 1951. (700266.)

30486. Rheostatic Co., Ltd., and Chinn, A. J.—Electric thermostats. 31st December, 1951. (700051.)

1952

1030. Philips Electrical Industries, Ltd.—Magnetic sound recording methods. 14th January, 1952. (700268.)

2415. Radio Corporation of America.—Signal-mixing circuits. 28th January, 1952. (700148.)

2496. Philips Electrical Industries, Ltd.—Cathodes for electric-discharge tubes. 30th January, 1952. (700053.)

2887. Standard Telephones & Cables, Ltd.—Fault alarm arrangements for electric communication systems. 4th February, 1952. (700149.)

3011. Philips Electrical Industries, Ltd.—Electric discharge tubes. 5th February, 1952. (700055.)

3116. Philips Electrical Industries, Ltd.—Circuits for automatic control of the frequency of an oscillator. 6th February, 1952. (700056.)

4466. Ateliers de Constructions Electriques de Charleroi.—Dielectric heating systems. 20th February, 1952. (700057.)

4992. International Business Machines Corporation.—Process for making cathode-ray tubes. 26th February, 1952. (700273.)

5746. Sperry Products, Inc.—Ultrasonic inspection of objects. 5th March, 1952. (700060.)

6291. British Thomson-Houston Co., Ltd.—Dynamo-electric machine commutators. 11th March, 1952. (700275.)

6654. Ateliers de Constructions Electriques de Charleroi.—Ultrasonic wave transducers. 14th March, 1952. (700151.)

7100. Philips Electrical Industries, Ltd.—Circuit arrangements for use in television receivers. 19th March, 1952. (700277.)

8327. Schrier, J.—Holders for incandescent electric lamps. 8th October, 1952. (700279.)

12910. Telefonaktiebolaget L. M. Ericsson.—Level regulating means in multi-channel carrier frequency transmission systems. 21st May, 1952. (700283.)

13905. General Motors Corporation.—Electrical traction and control systems. 3rd June, 1952. (700285.)

14591. Dynamit-Akt.-Ges. Vorm. A. Nobel & Co.—Priming compositions for electric incandescent and high-tension detonators. 10th June, 1952. (700072.)

16256. Standard Telephones & Cables, Ltd.—Semi-conducting crystal rectifier or amplifier and method of manufacturing it. 27th June, 1952. (700156.)

16660. Londex, Ltd. (Verniere, R.).—Electric lamp connectors. 2nd July, 1952. (700073.)

17076. Telefunken Ges. für. Drahtlose Telegraphie.—Circuit arrangements responsive to the phase relation between pulse sequences. 7th July, 1952. (700287.)

27437. Standard Telephones & Cables, Ltd.—Jacketing compositions for electric cables. 31st October, 1952. (700158.)

Amended Specifications

684915. Walsall Conduits, Ltd. and another.—Electric pin-plug connectors.

689973. English Electric Co., Ltd.—Multi-break electric circuit breakers.

TRADE MARKS

APPLICATIONS have been made for the registration of the following trade marks. Objections may be entered up to 30th October:—

AMPLIDEX. No. 720,456, Class 7. Electric generators, alternators, motors (not for land vehicles) and parts included in Class 7.—Brush Electrical Engineering Co., Ltd., Duke's Court, Duke Street, St. James's, London, S.W.1.

MICAFIL. No. 713,813, Class 9. Electrical instruments and apparatus and parts, all included in Class 9.—Micafil A. G. Werke fur Electro-Isolation und Wicklerei-Einrichtungen, Zurich, Switzerland. Address for service, c/o Marks & Clerk, 57-58, Lincoln's Inn Fields, London, W.C.2.

DIA-LEX. No. 717,602, Class 9. Sound recording and sound reproducing apparatus and instruments; electrically operated apparatus for controlling sound recording and sound reproducing apparatus and instruments; and parts included in Class 9.—Trevor-Johnstone Co., Ltd., 169, Sloane Street, London, S.W.1.

ELPESTHENE. No. 720,103, Class 9. Insulated electric cables, insulated electric wires; and parts included in Class 9 of electrical apparatus and instruments all made of plastics.—L.P.S. Electrical Co., Ltd., Ealing Road, Alperton, Middx.

RONDO (design). No. 713,169, Class 11. Heating apparatus, electric kitchen utensils included in Class 11, refrigerators, cooking apparatus (not being utensils), wash boilers incorporating heating means, and parts included in Class 11.—Rondo-Werke Berning & Co., Schwelm, Westphalia, Germany. Address for service, c/o H. A. L. Venner, 1, Great James Street, Bedford Row, London, W.C.1.

PHYTOR. No. 719,339, Class 11. Lighting installations and parts thereof included in Class 11, all for use in the cultivation of plant life.—Ateliers de Constructions Electriques de Charleroi, Brussels, Belgium. Address for service, c/o Feeny & Feeny, 2a, Chariwood Place, Westminster, London, S.W.1.

CONTRACT INFORMATION

Accepted Tenders and Prospective Electrical Work

CONTRACTS OPEN

Where "Contracts Open" are advertised in our "Official Notices" section the date of the issue is given in parentheses.

Belfast.—Electricity Department. Turbo-alternators, water pumps, piping, etc., electric travelling crane, switchgear, transformers and circuit breakers for Belfast West power station. (See this issue.)

26th October. Northern Ireland Housing Trust. Electrical installations in 66 flats at Rosebrook, Carrickfergus, Co. Antrim, and in 23 dwellings, 5 shops and one office at Bangor, Co. Down. Offices of the Trust, 12, Hope Street.

Blofield and Flegg.—23th November. R.D.C. Two sets of electrically driven vertical spindle borehole type pumps. Forms from John Taylor & Sons, engineers, Artillery House, Artillery Row, Westminster.

Braintree and Bocking.—14th November. U.D.C. Street lighting equipment. (See this issue.)

Dagenham.—30th November. Corporation. Street lighting equipment. (See this issue.)

Edinburgh.—North of Scotland Hydro-Electric Board. Submarine cable and distribution lines. (See this issue.)

Formosa.—10th November. Central Trust of China. Temperature recorders, multi-pointer gauges and electric panel clocks. (E.S.B. 5955/53. Ten/7282.)*

Grimsby.—Corporation Education Committee. Furniture and equipment, including radio and electrical equipment, for the College of Further Education. (See this issue.)

India.—Bangalore City.—22nd October. Stores Purchase Committee. Electric motors, reduction gears, etc., for working mortar mills. (E.S.B. 5806/53. Ten/7273.)*

London.—20th November. India Store Department. Ninety-eight 4 to 5 kW engine generators. (See this issue.) 13th November. Radio installation kits. (See this issue.)

High Commissioner for Pakistan. Telephone switchboard wires and cables. (See this issue.)

Newcastle-on-Tyne.—4th November. City Council. Electrical installations in 221 houses, Kenton North estate. City architect, 18, Cloth Market.

New Zealand.—Wellington.—3rd November. State Hydro-Electric Department. Eight 110 kV, 2,500 MVA circuit breakers and accessories. (E.S.B. 4427/53. Ten/7198).* 10th November. Thirteen 110 kV, 2,500 MVA circuit breakers and accessories. (E.S.B. 4928/53. Ten/7196.)* 18th November. Cable glands. (E.S.B. 6123/53. Ten/7289.)*

*Specifications may be inspected at the Export Services Branch, Board of Trade, Lacon House, Theobald's Road, London, W.C.1 (Chancery 4411; extension 769).

Peru.—Lima.—30th October. Technical Department of Communications, Peruvian Corporation of Airports and Commercial Aviation. Radio communication receivers. (E.S.B. 5981/53. Ten/7279.)*

Reigate.—23rd October. Town Council. Installation of traffic lights at the junction of Church Street and Castlefield Road, and at Battlebridge Lane, Merstham. Forms from the borough surveyor, Town Hall.

Royston.—9th November. U.D.C. Street lighting equipment. (See this issue.)

Staffordshire.—County Council. Electrical contractors wishing to be included on an approved list of contractors for electrical installations must submit applications by 31st October. (See this issue.)

Tottenham.—10th November. Borough Council. Electric lamps for one year from 1st April next. Forms from the town clerk, Town Hall, N.15.

Uttoxeter.—26th October. U.D.C. Supply and erection of twelve mercury discharge lamps on twelve reinforced concrete columns, with wiring and fixing lanterns and auxiliary gear. Forms from the surveyor, Old Bank House Annexe, High Street.

ORDERS PLACED

London.—L.C.C.—Electrical installation at Whittington primary school, Islington (£3,321).—Buchanan & Curwen, Ltd.

Lowestoft.—East Anglian Regional Hospital Board. Electrical installation at the Lowestoft and North Suffolk Hospital (£4,894).—Eastern Electricity Board.

Swanscombe.—U.D.C. Supply of 50 refrigerators for Council houses (£1,927).—Electrolux, Ltd. (Wiring and fixing of the refrigerators to be carried out by direct labour.)

WORK IN PROSPECT

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Amble.—Houses (50), Links estate; U.D.C. surveyor.

Barnet.—Factory on site near By-pass; Wembley Hosiery Manufacturing Co., Alperton.

Birmingham.—Fire station and houses at Garretts Green Lane, Sheldon, for Fire Brigade Committee; H. J. Manzoni, city engineer, Civic Centre.

Blackburn.—Developments at Queen Elizabeth's Grammar School; Harold Cooper, architect, Richmond Terrace.

Brentwood.—Flats (90), Ingrave; East Ham housing officer, Town Hall, E.6.

Brighton.—Erection of special school for educationally sub-normal children; Jeffery & Sons (Hove), Ltd.

Six-class extension at Woodingdean Primary School; borough surveyor and engineer, 26-30, King's Road, Brighton, 1.

Chester-le-Street. — Works additions at Birtley for the British Oxygen Co., Ltd., Bridgewater House, Cleveland Row, St. James's, London, S.W.1; own architects.

Houses (95), Scorers Lane, Lumley, for R.D.C.; F. Bowman, architect, Great North Road, Birtley.

Coventry.—Car factory, Banner Lane; Standard Motor Co., Ltd., Coventry.

Crigglestone (West Riding).—Secondary school; Farquharson & McMorran, architects, 14, North Audley Street, London, W.1.

Dagenham.—Research laboratory extensions; May & Baker, Ltd., Rainham Road South.

Darlington. — School building programme next year: Haughton Secondary Modern Technical (£190,000) and Arthur Pease Primary (£44,000); A. E. Tornbohm, borough architect.

Dover. — Dwellings (42), Aycliffe estate; borough engineer.

Edmonton.—Works extensions; Metal Alloys & Smelting Works, Ltd., Eley's estate, Angel Road.

Goole.—Houses (53), on several sites; and flats (72) in Edinburgh Street; borough surveyor, Municipal Offices.

Gosport.—Factory and offices, Fareham Road; Trico-Folberth, Ltd., Great West Road, Brentford.

Hale (Ches).—Houses (67), Delahays estate, for U.D.C.; D. Franklyn, 2, Midland Bank Chambers, Urmston.

Hayes and Harlington.—Houses (50), and six shops, Barnhill estate; A. E. Higgins, clerk to U.D.C., Town Hall, Hayes, Middx.

Herstmonceux.—Group of buildings at Royal Observatory; Charles R. Price, builders, Kingsbury Road, N.W.9.

Ilford.—Departmental store, 113/119, High Road; Littlewoods Mail Order Stores, Ltd., 213, Oxford Street, W.1.

Ipswich.—Children's unit at Borough General Hospital; East Anglian Regional Hospital Board, 33, Parkside, Cambridge.

Irthlingborough (Northants). — Houses (28), Addington Road, and dwellings in Park Road; Council's architect.

Leatherhead.—Houses (150), Ashtead; J. L. Davies, U.D.C. surveyor, Council Offices.

Liverpool.—Reconstruction of premises at 197, Great Howard Street, for Jute Industries, Ltd.; Willink & Dodd, architects, Cunard Buildings.

London.—BERMONDSEY.—Flats (78), Linsey Street; Ashley & Winton Newman, architects, 3, Verulam Buildings, Gray's Inn, W.C.1.

HOLBORN.—Office block, 120-124, Theobalds Road; Electra (Westminster) Property Investment Co., Ltd., 33, King William Street, E.C.4.

STOKE NEWINGTON.—Branch library, Woodberry Down; Gold & Aldridge, architects, 42, Church Street, Baldock.

STRAND.—Reinstatement of St. Clement Danes Church; W. A. S. Lloyd, architect, 5, Pickering Place, S.W.1.

Longbenton.—Houses (130), Fordley, for U.D.C.; A. E. Sweetman, surveyor, Council Offices, Forest Hall, Newcastle-on-Tyne.

Maidstone.—Branch offices, 4, High Street; Halifax Building Society, Ltd., High Street, Halifax.

Office block with canteen; Autometric Pumps, Ltd., Waterside.

Middlesbrough.—Nursery wings at Berwick Hills No. 1 School and Green Lane County Primary School and new primary school at Berwick Hills; P. R. Middleton, education architect.

Mental health centre in Park Road North; borough engineer, Municipal Buildings.

Newbury.—Primary school, Valley Road; Berkshire county architect, Wilton House, Parkside Road, Reading.

Newcastle (Staffs).—Houses (60), Northwood site; borough surveyor, Lancaster Building, High Street.

Plymouth.—Factory extensions; Bush Radio, Ltd., Ernesettle Industrial Estate.

Preston. — Pathological and public health laboratories, Royal Infirmary; Manchester Regional Hospital Board, Cheetwood Road, Manchester, 8.

Flats (34), Gamull Lane; borough surveyor.

Ramsbottom. — Houses (53), near Tagg Wood; F. Bellis, clerk to U.D.C., Market Place.

Rochdale.—Houses (162), Mayfield estate; borough surveyor.

Royton.—Extensions at St. Aidan's R.C. School; Reynolds & Scott, architects, 9, Albert Square, Manchester.

South Shields.—Alterations to Whiteleas Hospital (£10,000); M. A. Mackenzie, architect, 1, Eldon Square, Newcastle-on-Tyne.

Additions to Horsley Hill County Boys' and Girls' School; J. Wilks, architect, 13, Winchester Street.

Swansea.—Laundry, Old Phœnix Dock area; Swansea Baths & Laundry Co., Ltd., St. Helens Road.

Uxbridge.—Dwellings (61), Corwell Lane, Hillingdon; H. E. G. Stripp, surveyor, 263, High Street.

Watford.—Houses (90) on site at Cecil Lodge, Abbots Langley; Dawe, Carter & Partners, architects to R.D.C., 33, Clarendon Road.

Wisbech. — Maternity unit for Clarkson Hospital; East Anglian Regional Hospital Board, 33, Parkside, Cambridge.

Witney.—Houses (106); R.D.C. surveyor, 103, High Street.

Yeovil.—Houses (50), in seven parishes; R.D.C. surveyor, 28, Kingston.